DOCUMENT RESUME

ED 043 522 24 SE 009 865

TITLE	Educational Technology Project, Volume Two, Role of the Science Supervisor (Set 1).
INSTITUTION	National Science Teachers Association, Washington, D.C.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	BR-8-0427
PUB DATE	Feb 70
GRANT	OEG-3-8-080427-0052(010)
NOTE	162p.
EDRS PRICE	EDRS Price MF-$0.75 HC-$8.20
DESCRIPTORS	*Curriculum Development, *Educational Research, Evaluation, Inservice Programs, *Instructional Materials, *Management, *Science Education, Supervisors

ABSTRACT

This volume contains one of the four sets of materials produced for training science supervisors in educational technology. It contains a script and a black and white copy of each photographic slide used in five coordinated audio-tape and slide presentations. Audio-tapes and slides are not included with this report. The "curriculum revision" package lists the responsibilities of supervisors in assessing present curricula, leading and managing revision committees, public relations including reacher cooperation, inservice course implementation, organization of supplies, equipment, teacher scheduling, and evaluating the new course. The "evaluation" package indicates that the science supervisors' background should enable him to make judgments of teachers, students, curricula, and his own role as objectively as possible, always focusing on the learner. Management functions and priorities are described in "management," and methods of involving teachers, parents, students, and the community in science education improvement are discussed in "public relations." The "research" package identifies sources of scientific and educational research results and suggests methods of their utilization. All packages contain a short bibliography and a copy of pre- and posttests, assessing the achievement of the objectives stated in each. (AL)

BR8-0427
PA24
SE

EDUCATIONAL TECHNOLOGY PROJECT

ED043522

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ROLE OF THE SCIENCE SUPERVISOR

SET I

E4632

VOLUME TWO

SE 009 865

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education Bureau of Research

ED043522

FINAL REPORT

PROJECT NO. 8-0427

GRANT NO. OEG-3-8-080427-0052 (010)

VOLUME TWO

ROLE OF THE SCIENCE SUPERVISOR (SET I)

Educational Technology Project
National Science Teachers Association
Washington, D.C. 20036

February 1970

U.S. DEPARTMENT OF
HEALTH, EDUCATION, & WELFARE
OFFICE OF EDUCATION
BUREAU OF RESEARCH

C O N T E N T S

INTRODUCTION / 1

APPLICATION HANDBOOK - CURRICULUM REVISION / 4

Media Sheet / 7

Introduction / 8

Script / 9

Bibliography of Support Material /29

Criterion Assessments /32

APPLICATION HANDBOOK - EVALUATION /39

Media Sheet /42

Introduction /43

Script /44

Bibliography of Support Material /55

Criterion Assessments /59

APPLICATION HANDBOOK - MANAGEMENT /63

Media Sheet /66

Introduction /67

Script /68

Bibliography of Support Material /85

Criterion Assessments /86

APPLICATION HANDBOOK - PUBLIC RELATIONS /94

Media Sheet /95

Introduction /96

Script /97

Bibliography of Support Material /111

Criterion Assessments /113

APPLICATION HANDBOOK - RESEARCH /121

Media Sheet /124

Introduction /125

Script /126

Bibliography of Support Material /143

Criterion Assessments /154

INTRODUCTION

This introduction is intended only to acquaint you with the total structure of the entire Set of packages and provide an application plan for the Set. Specific content information and objectives for the individual packages are a part of the Application Handbook and will not be covered in this introduction. / 1

Set I contains five independent packages of material concerned with the role of the science supervisor. Each package is a complete, self-contained unit except for media hardware (tape recorder and slide projector). Two sections comprise each unit: *

First) Applications Handbook containing

- Media Specifications
- Introduction
- Criterion Assessments
- Script
- Bibliography

Second) Audio tape (either reel to reel or cassette) and slides.

---

*NOTE: For this report, only the application handbooks are included.

The packages within this set have been developed as learning materials for science supervisors to be able to:

a) identify specific areas where his science supervisory activities should be modified or enlarged.

b) seek information in areas where he is unfamiliar (exhibits openness to change).

Each package covers a specific supervisory area and has a number of objectives for that area.

It must be strongly emphasized that these presentations are not - do not profess to be - the last word on the role of the science supervisor. No single person could do everything presented. Every supervisor operates within a real world situation. He usually has a specific job function with both overt and covert restraints. A major unspecified purpose of the materials is to force supervisors, both experienced and new, to examine their real world situations. Job functions are flexible and constraints can often be eliminated or softened. The functions presented in these packages invite re-examination of the total supervisory role and of existing operational priorities.

Each supervisor should use Set I as the material meets his needs. There is no specified sequence for the packages.

The five major areas covered (in alphabetical order) are:

Curriculum Revision

Evaluation

Management

Public Relations

Research

In using the packages pick the one that interests you most. Take the application handbook, read the media sheet and introduction. If you decide to go further you may take the pre-assessment* which covers the specific content of the tape/slide presentation. This will provide an individual indication of the degree to which you already know the contents. Going through all of the pre-assessments is a fairly time consuming activity, and it is not necessary if you intend to go through all of the packages. In that case, use the pre-assessment following this introduction.

Each presentation if followed by a listing of bibliographic material relevant to the content of the package. This selected listing will serve to extend and refine the concepts in the presentation. Some references will be of value for your future use (e.g., the "Sources of Information for Media Selection" included at the end of the Curriculum Revision and Management packages). Other references will be of immediate value upon completion of a package.

---

* NOTE: In this report, the criterion assessment responses are included.

PROTOTYPE

APPLICATION HANDBOOK

for

CURRICULUM REVISION

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Nat'l Science Teachers Asso.

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

SET I

This material is for validation purposes only.
DO NOT DISTRIBUTE OR DUPLICATE.

The following package on Curriculum Revision was prepared by

Writer: Layton Mabrey

Art Preparation: Layton Mabrey and Lee Marrs

Photography: Douglas Boyd and Mary McGovern

Audio: Douglas Boyd

Editing & Revision: Clarice Leslie &
George H. Ziener

Criterion Assessments: Virginia Trowbridge

Manuscript Coordinator: Dorothy B. Lutz

TABLE OF CONTENTS

MEDIA SHEET

INTRODUCTION

SCRIPT

BIBLIOGRAPHY OF SUPPORT MATERIAL

CRITERION ASSESSMENTS - PRE/POST

MEDIA SHEET

The following media are necessary for the presentation of this package:

1 set of SLIDES on CURRICULUM REVISION.

1 audio cassette TAPE on CURRICULUM REVISION. / 7

1 carousel SLIDE PROJECTOR.

1 audio CASSETTE TAPE RECORDER.

(Optional)

1 CASSETTE SLIDE SYNCRONIZER by Norelco or its equivalent.

INTRODUCTION

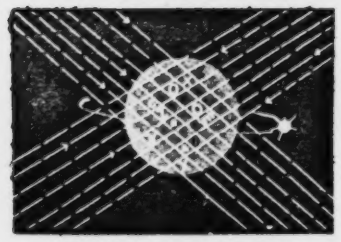
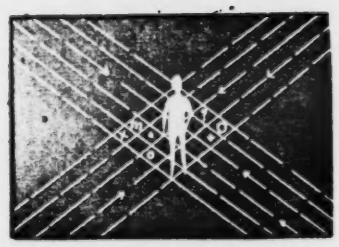
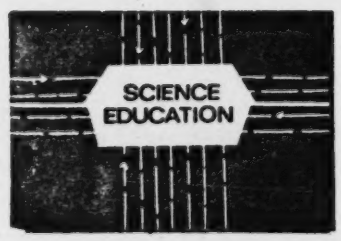
Purpose:

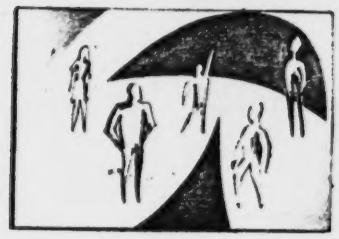
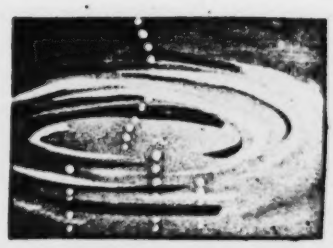
1) To present the need for a science supervisor to be involved in curriculum revision.
2) To identify some of the mechanisms of curriculum revision and the means by which a science supervisor might function.

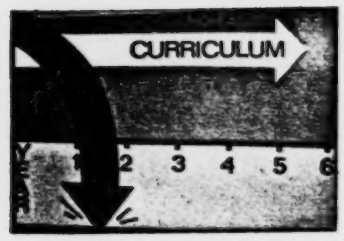
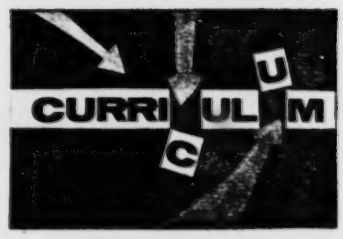
Objectives:

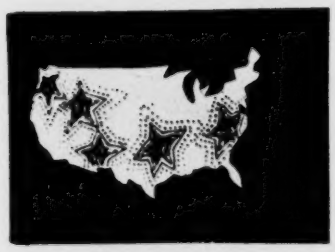
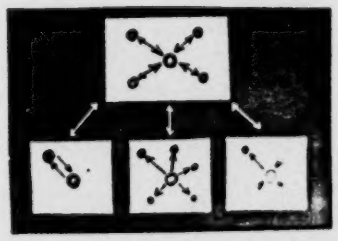
The science supervisor will be able to

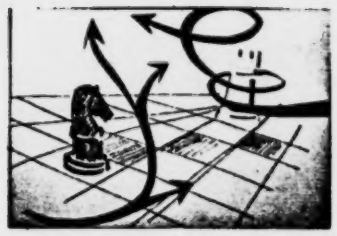
1) identify three reasons for curriculum change,
2) identify three characteristics of a good curriculum,
3) specify areas where he can influence curriculum change,
4) develop an outline for action by which he can provide input into the curriculum change process.

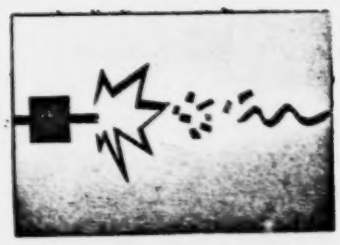
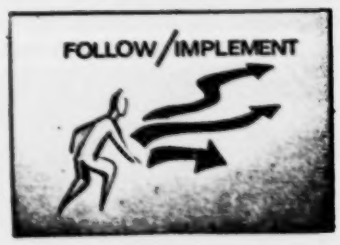
SOUND	VISUALS
Music in strong then out	
1. Today a vast display of information engulfs us. INFORMATION.... On paper.... As electronic message.... Riders of the airways. Hitchhikers via satellite.... On a 1/7 of a second scan of the globe....	
2. Within the past decade mankind has been bombarded with more information, some worthwhile....some perhaps not, but, by far, more than man can handle....	
3. ....and science education has had its share of this information deluge....	

SOUND	VISUALS
4. Some dramatic social changes have mixed in with this information scatter-out, compounding the processes of effective and credible COMMUNICATION,	
5. ....in the middle of this H-O-T-B-E-D challenge, stands the science supervisor....	/10
6. ....and above all YOUTH is there in the students he must reach....and YOUTH BY NATURE NO LONGER TOLERATE THE OBSOLETE....The message.... KEEP YOUNG....	
7. To escape the threat of obsolescence, education in the sciences must be based upon the kind of information that has SURVIVAL VALUE....	

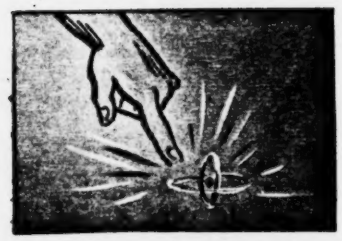
SOUND	VISUALS
8. ....and it must contain validated procedures of inquiry that facilitate the ADAPTATION of KNOWLEDGE to NEW DEMANDS....	
9. Your role as science supervisor in developing a curriculum is to make sure that the information selected for inclusion in science courses WILL SURVIVE longer than the year in which it's taught.	
10. You must be aware of new innovative methods that will allow adaptation of such information to meet the demand for survival.	
11. Today, the scientific, the social, and the cultural scenes are in a continuous process of change; therefore....the CONTENT of science courses must be frequently.... EVALUATED....	

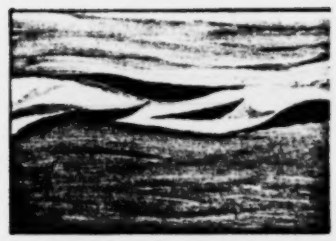
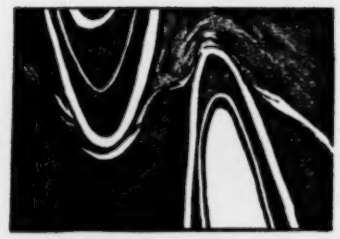
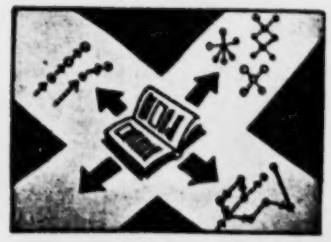
SOUND	VISUALS
12. ....and when necessary....REVISED to reflect major shifts in thinking and new interpretations of phenomena.	
13. You, the science supervisor play the role of CHANGE AGENT. You either initiate and direct significant changes or stand to watch your science program become obsolete....	/1
14. Contributing to the scene of ferment are a number of other science curriculum development projects, already completed or in process....	
15. ....these curriculum developments add another dimension to your job. Since each project has developed it's own approach toward meeting its own problems, you	

SOUND	VISUALS
15. Continued. the supervisor, must now utilize these approaches in terms of student needs at the local level.	
16. Now, underlying principles of a curriculum project influence the direction and manner in which the curriculum develops....therefore strategies necessary to implement curriculum change within one framework may be quite different from those required under an alternate framework....	/13 
17. GREATER INVOLVEMENT and LEADERSHIP must be exercised on your part when administrative decision is made to shift from one framework to another. <u>This requires decision</u> making on your part....	

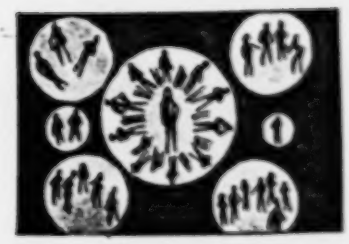
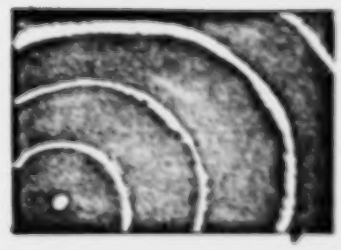
SOUND	VISUALS
18. ....A program for curriculum development does not spring ready-made from a cookbook for science supervisors. It must be developed through careful, thorough planning by an interested and willing group of competent individuals....	
19. Major decisions, with far reaching implications, are often made early in a program of curriculum development. Effecting a midstream change in an existing approach or set of principles is difficult and can be disastrous to the whole program.	
20. One major decision you as science supervisor will have to make.... will you merely <u>FOLLOW</u> the <u>TRENDS</u> and <u>IMPLEMENT</u> suggestions made by the administration and the faculty....	

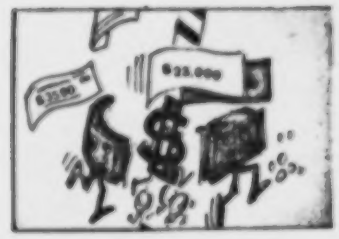
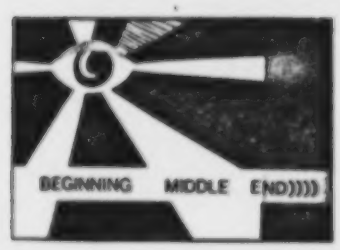
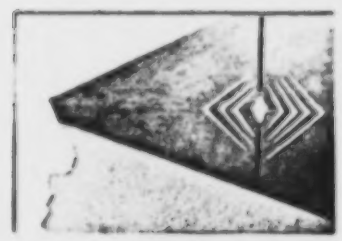
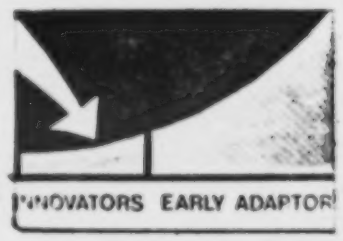
/1

SOUND	VISUALS
21. ....OR....	
22. ....will you provide <u>LEADERSHIP</u> in new fields and <u>develp new ideas</u> that can influence the trends of the future?	/15
23. Someone must innovate....Others will adapt to the trends established by the more imaginative....and the more courageous....	
24. <u>The desired end product for any curriculum revision or development is improved student learning experiences</u>....	

SOUND	VISUALS
25. ....And so <u>all aspects of contemplated changes</u> must be <u>carefully investigated</u> to establish sound, valid reasons for the need of such changes....	
26. ....The process of changing the curriculum encompasses a wide variety of sub-processes.	
27. Forces predictable and unpredictable invade the process, modifying the nature of the curriculum.	
28. Some of these forces are: ....the mushrooming growth of scientific knowledge....	
29. ....certain more stable but evolving concepts of science....	

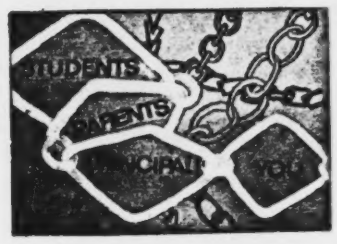
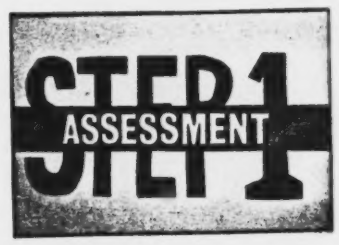
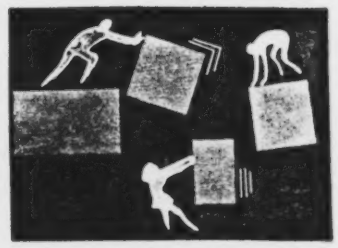
/16

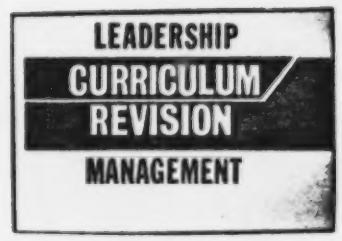
SOUND	VISUALS
30. ....those varied processes by which scientific advances are made....	
31. ....research developments in the field of learning theory and creativity....	/17
32. ....and forces related to the philosophy of the school system, and the community. All of these exert a pressure on the development of a science curriculum.	
33. Let us not deceive ourselves.... the task of developing a valid science program is <u>difficult</u>....	
34. ....it takes time....	

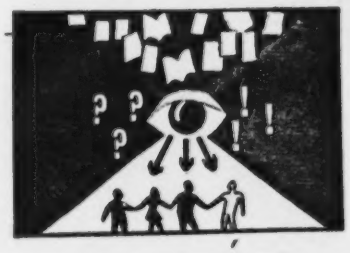
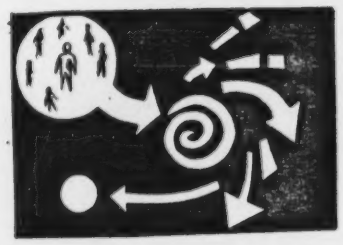
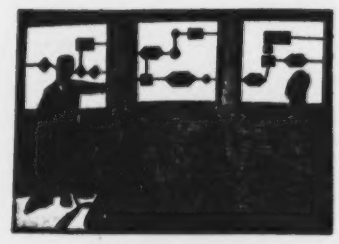
SOUND	VISUALS
35. ....and money....	
36. ....dedicated personnel....	
37. ....and the task is never really finished....but it is vital. All possible intellectual and financial resources must be summoned to do the job.	
38. Long range curriculum development requires the leadership and organizational skills of a highly motivated individual, whether he be a special curriculum coordinator or YOU, the science supervisor....	
39. Remember, even though the philosophy of the science program has been	

/18

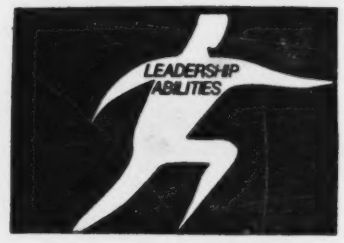
SOUND	VISUALS
39. Continued. determined before you begin, you can <u>contribute your skills and your special talents as an innovator and facilitator of change</u>.	/19
40. ....And the chances are high that you may even modify that pre-determined philosophy.	
41. Again, as a supervisor you will be influenced from many sources to <u>bring about change</u>. For example, a number of students receive low grades on their science achievement tests. Communication lines grow hot....parents call the situation to the attention of the principal.... and the final assessment of the problem is left to YOU....	

SOUND	VISUALS
42. This chain of communication is only one of many, which serve to <u>INITIATE</u> the <u>FIRST STEP IN THE PROCESS OF CURRICULUM REVISION</u>:	
43. <u>The assessment of the current curriculum</u>.	 /20
44. Another aspect of communication which will have a positive influence on curriculum change is the establishment of an action oriented committee, a committee small in numbers perhaps, but strong in terms of vigor, action, and dedication to meeting the challenge.	
45. Your participation in the selection and operation of this committee can produce one of the strongest forces	

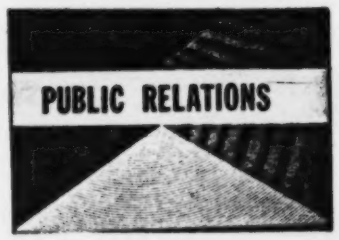
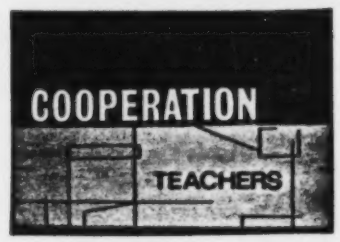
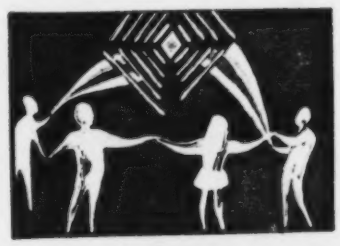
SOUND	VISUALS
45. Continued. in the curriculum change process....	
46. This identifies another area of responsibility for the science supervisor in the curriculum revision process: leadership and management.	 /21
47. <u>As a Manager you must identify</u> those in the community who will be sympathetic to curriculum change and be willing to serve on the committee.	
48. <u>As a leader</u>, you <u>must keep up to date</u> on trends in science education and the latest science-related research projects.	

SOUND	VISUALS
49. ....survey the literature and communicate this wealth of information to the curriculum committee....	
50. ....apply your skills in <u>group action strategies</u>, enabling the committee to function effectively....	
51. ....provide necessary materials and supplies for the committee members to use....	
52. ....<u>arrange for special projects or demonstrations</u> to support curriculum change-over....	
53. ....you keep the teaching staff informed of the committee's progress and in turn, benefit from an exchange of ideas with the teachers.	

/22

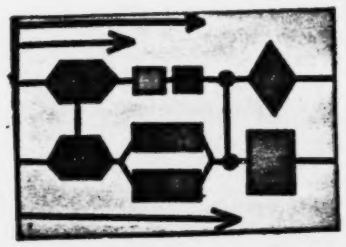
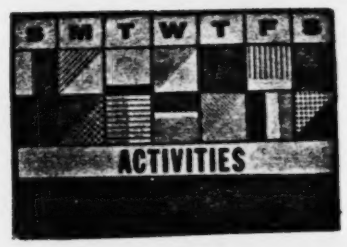
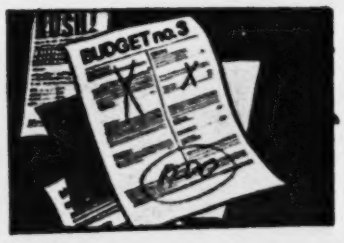
SOUND	VISUALS
54. ....you communicate essential information to the community at large....serving as a voice for the inarticulate and encouraging involvement by minority groups who are often reluctant and lack opportunity to participate in school affairs.	
55. The ultimate effectiveness of the committee's work <u>depends greatly on your leadership qualities</u> as well as your ability to delegate authority to members of the committee.	
56. But successful initiation and functioning of a curriculum committee does not relieve you, the science supervisor, of further responsibilities in the curriculum change process....Implementing the change becomes your next challenge.	

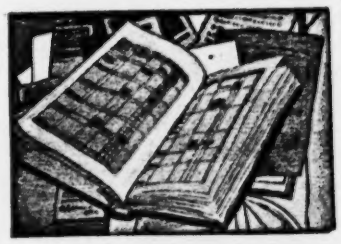
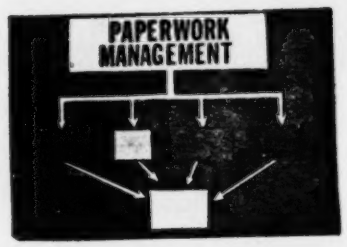
/23

SOUND	VISUALS
57. Implementing curriculum change is really a selling job. Public relations experience will go a long way in helping to create a positive change-environment....	
58. A curriculum plan possessing style and character stands a better chance of winning the cooperation of <u>both</u> the teachers and the community at large.	
59. Attainment of change goals requires that rapport, especially with teachers, be carefully nutured. Only by maintaining faculty cooperation <u>can the completion of a well-planned and carefully structured program be expected</u>.	
60. Sometimes, curricular changes cannot be implemented because of insufficient funds.	

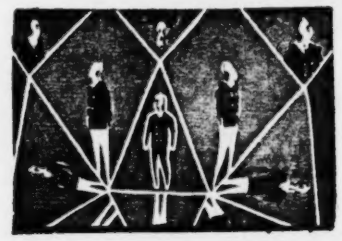
SOUND	VISUALS
61. As Science Supervisor you need to be aware of available sources of funds, whether federal, foundation monies or industrial contributions....and should be able to prepare proposals to acquire those funds.	
62. You must also initiate in-service programs for teachers who will be responsible for implementing the revised curriculum.	
63. A good in-service program is an A-C-T-I-O-N program....	
64. ....an action experience in which the teachers are directly involved.... where they will have the opportunity to discuss the program's goals and to contribute to the project's development and implementation.	

/25

SOUND	VISUALS
65. The planning of an in-service program should run parallel to, not follow, the process of curriculum revision....	
66. A continuing spectre of paper-work faces you as you attenpt to implement a new curriculum....	
67. Paperwork tasks may include: more meticulous teacher scheduling,....	
68. ....addition of more materials, supplies, and equipment,....	
69. ....complication of budgeting procedures,....	

SOUND	VISUALS
70. ....and additional reportage and record-keeping chores....	
71. These management tasks are important to the successful implementation of curricular changes. By applying sound management procedures down the line, these tasks can be effectively handled.	
72. Finally, one of the most difficult and vital functions in the process of changing a curriculum, is the carrying out of a <u>carefully designed</u> and <u>valid</u> EVALUATION of the program.	
73. Above all, an effective evaluation program must be developed as an integral part of the curriculum project, in order to reach the established goals.	

/27

SOUND	VISUALS
74. And so, your role may appear to be an overwhelming one.... It is, <u>rather, an invitation to take on additional facets of science supervisorship which could extend horizons and prove to be an exciting and rewarding experience</u>.	

/28

CURRICULUM REVISION PACKAGE

B I B L I O G R A P H Y

John W. Ashenfelter, "A Partially Learner-Paced Approach to Teaching PSSC Physics," Physics Teacher, February 1969, pages 93-8.

J. Myron Atkin, "Some Evaluation Problems in a Course Content Improvement Project," Journal of Research in Science Teaching, 1:2 (February 1963); pages 129-132.

Earl Brakken, "Science Resource Center," Instructor, 78:8 (April 1969), pages 77-8.

Thomas E. Cyrs, Jr. and Rita Lowenthal, "A Model for Curriculum Design using a Systems Approach," Audiovisual Instruction, 15:1 (January 1970), pp. 16-18.

James E. Eisele, "Guidelines for Regional Curriculum Planning," Educational Leadership, 26:4 (January 1969), pages 366-70.

Integrated Information Unit: Elementary Science Curriculum, produced and distributed by the Far West Laboratory for Educational Research and Development, 1 Garden Circle, Hotel Claremont, Berkeley, California 94705. Includes folders, six filmstrips and audio tapes, and other print information. Developed as a comparative guide to the following elementary science programs:

- Science--A Process Approach
- Inquiry Development Program (IDP)
- Science Curriculum Improvement Study (SCIS)
- Elementary Science Study (ESS)
- Minnesota Mathematics and Science Teaching Project (MINNEMAST)

John D. McNeil, "Forces Influencing Curriculum," Review of Educational Research, 39:3 (June 1969), pages 293-318.

Joseph D. Novak, "A Case Study of Curriculum Change--Science Since PSSC," School Science and Math, 69:6 (May 1969), pages 374-84.

Wilbur S. Slawson, "Bases of Science Curriculum Development in the Future," Science Teacher, 35:3 (March 1968), pages 22-4.

SOURCES OF INFORMATION FOR MEDIA SELECTION

The Audio-Visual Equipment Directory: A Guide to Current Models of Audio-Visual Equipment. Fairfax, Virginia: National Audio-Visual Association, Inc. ($7.00)

An annual directory, produced by the trade association of audiovisual hardware manufacturers, includes pictures and specifications of the equipment.

Audiovisual Marketplace: A Multimedia Guide, second edition. New York City: R. R. Bowker Company, 1970. ($12.25)

The most comprehensive directory of hardware and software manufacturers/producers/distributors. Includes listings of media organizations, periodicals, film libraries, educational radio and television stations.

Educators Guide to Free Science Materials. Randolph, Wisconsin: Educators Progress Service, 1968. ($8.25)

Lists free films, filmstrips, tapes, transcriptions, and other printed material.

Educational Products Report. Published monthly, October-June. Educational Products Information Exchange, 386 Park Avenue South, New York, N.Y. 10016.

Each issue covers a specific product; e.g., recent issues have included black studies materials, science kits, programmed instruction materials, 8mm projectors and films. The Report contains objective data on equipment and materials which will save weeks of staff time in searching through promotional literature to gather information for purchasing decisions.

Carl Hendershot. Programmed Learning: A Bibliography of Programs and Presentation Devices, fourth edition. Bay City, Michigan: Carl Hendershot, 4114 Ridgewood Drive, ($27.50, including supplements through June 1970)

Index to 16mm Educational Films, second edition. New York City: R. R. Bowker Company, 1969. ($38.50)

Contains 35,000 entries for commercially available 16mm films. More than 10,000 entries in the natural and physical sciences.

Index to 8mm Educational Film Loops, first edition. New York City: R. R. Bowker Company, 1969. ($16.00)

Approximately 10,000 entries for commercially available 8mm film loops.

Index to 35mm Educational Filmstrips, second edition. New York City: R. R. Bowker Company, 1969. ($34.00)

Some 25,000 entries.

Index to Educational Transparencies, first edition. New York City: R. R. Bowker Company, 1969. ($20.00)

Some 15,000 entries.

Harris H. Shettel and Pamela C. Reilly, "Evaluation of Existing Criteria for Judging the Quality of Science Exhibits," AV Communication Review, 14:4 (Winter 1966), pages 479-488.

EDUCATIONAL TECHNOLOGY PROJECT

PRE-POST

criterion assessments

SET I CURRICULUM REVISION

For this report the desired responses have been included on the sheet opposite each question.

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

CRITERION ASSESSMENT

SET I PACKAGE CURRICULUM REVISION

DATE _____ NAME _____

STIMULUS	RESPONSE
1. Give a rationale of at least two (2) reasons for the need for curriculum revision.	1) Knowledge explosion. 2) Adaptation of knowledge to new demands. 3) Sociological change. 4) Obtain content with survival value. 5) Cultural change. (At least two are acceptable) /33
2. Describe the role of the science supervisor as a CHANGE AGENT.	1) Provide leadership. 2) Develop new ideas. 3) Direct significant changes.
3. Complete the following statement: "The goal of any curriculum revision or development is improvement of _____."	Student learning.

CRITERION ASSESSMENT

SET I PACKAGE CURRICULUM REVISION

DATE _____ NAME _____

STIMULUS	RESPONSE
4. List at least four (4) forces that are tending to shape the science curriculum.	1) Mushrooming growth of scientific knowledge. 2) Evolving concepts of science. /34 3) Varied processes by which scientific advances are made. 4) Developments in the field of learning theory. 5) Developments in the field of creativity. 6) Forces related to philosophy of the school system.
5. State the three (3) major conditions necessary for the development of an articulated science program.	Time, money, dedicated personnel. (May be paraphrased)

CRITERION ASSESSMENT

SET I PACKAGE CURRICULUM REVISION

DATE _____ NAME _____

STIMULUS	RESPONSE
6. List three (3) or more ways of working within the present philosophy of your science program and still be an innovator and faciliator of change.	1) Assessment of existing curriculum. 2) Select an action-oriented committee. /35 3) Keep current on trends in science education. 4) Apply group action strategies. 5) Arrange special projects or demonstrations to suppor curriculum change. 6) Keep teaching staff informed.
7. Name at least four (4) possible sources of funds that could be gotten for initiating a curriculum change, when the local budget is inadequate.	1) Federal funds. 2) Professional funds(NEA, etc 3) Foundation monies. 4) Industrial contributions. 5) Local individuals.

CRITERION ASSESSMENT

SET I PACKAGE CURRICULUM REVISION

DATE _____ NAME _____

STIMULUS	RESPONSE
8. List the most important characteristics of a good in-service program.	1) Involvement of teachers in discussing the program's goals. 2) Contributing to project's improvement and implementation. /36 3) Parallel the process of curriculum revision. (All answers must imply <u>action</u>)
9. Demonstrate knowledge of paper-work impediments that may arise during the implementation of a new curriculum, by listing at least four (4).	1) Teacher scheduling 2) Addition of more materials. 3) Addition of more equipment 4) Budgetary complications. 5) Addition of more supplies.

CRITERION ASSESSMENT

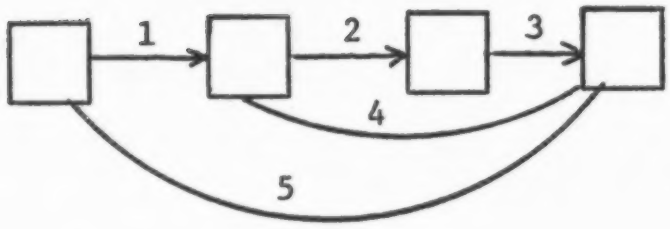
SET I PACKAGE CURRICULUM REVISION

DATE _____ NAME _____

STIMULUS	RESPONSE

10. From the following factors in curriculum, indicate by boxes and arrows one possible arrangement for effective curriculum change. Number your arrows and give the reason for each arrow. (One fictious model is given below.) Make your model as useable as possible for your situation.

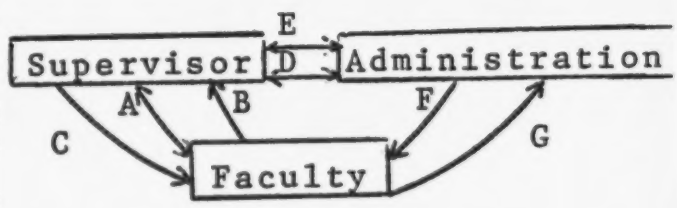
Factors: Community
Faculty
Parents
Students
Supervisor



1. _____
2. _____
3. _____
4. _____
5. _____

Must indicate a sensitivity and need for obtaining information from each. One example of this sensitivity is shown in the model below

/37



A. Faculty involved in committee to discuss new revision. Feeds back to supervisor pro's and con's Implements program of supervisor.

B. Supervisor accepts recommendations of faculty.

C. Supervisor suggests workshop in new teaching method.

CRITERION ASSESSMENT

SET I MODULE CURRICULUM REVISION

DATE _____ NAME _____

STIMULUS	RESPONSE
10. Continued.	D. Supervisor notifies administration of need and monetary cost. /38 E. Administration accepts input from Supervisor and arranges monetary and other supports. F. Administration recognizes extra work of participating teachers. G. Teachers accept budgetary limitation of administration.

PROTOTYPE

APPLICATION HANDBOOK

for

EVALUATION

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Nat'l Sci. Teachers Asso.

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

SET I

This material is for validation purposes only.
DO NOT DISTRIBUTE OR DUPLICATE.

The following package on Evaluation was prepared by .

Writer: Harold J. Maloney

Art Preparation: Creston B. Coffield
Louis M. Custodio

Photography: Douglas Boyd
Mary McGovern

Audio: Douglas Boyd

Editing & Revision: Clarice Leslie
George H. Ziener

Criterion Assessments: Virginia Trowbridge

Manuscript Coordinator: Dorothy B. Lutz

TABLE OF CONTENTS

MEDIA SHEET

INTRODUCTION

SCRIPT

BIBLIOGRAPHY OF SUPPORT MATERIAL

CRITERION ASSESSMENT - PRE/POST

MEDIA SHEET

The following media are necessary for the presentation of this package:

1 set of SLIDES on EVALUATION.

1 audio cassette TAPE on EVALUATION.

1 carousel SLIDE PROJECTOR.

1 audio CASSETTE TAPE RECORDER.

(Optional)

1 CASSETTE SLIDE SYNCRONIZER by Norelco or its equivalent.

INTRODUCTION

Purpose:

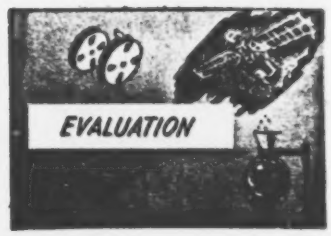
1) To identify the need for a science supervisor to evaluate his activities and the effectiveness of the science education program. /43
2) To present some specific approaches to evaluation and areas for application.

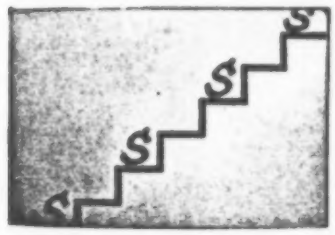
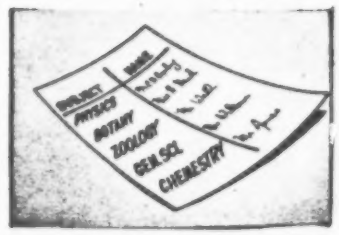
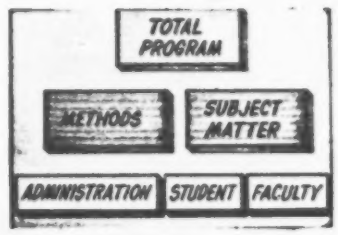
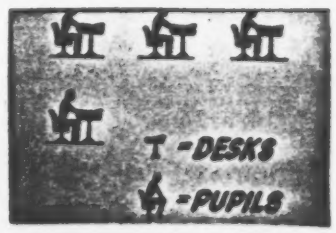
Objectives:

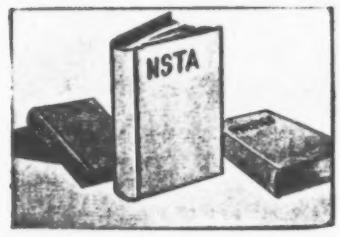
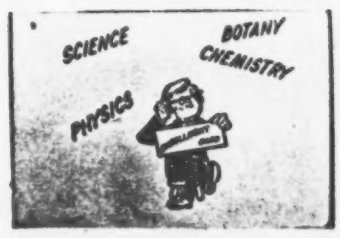
The science supervisor will be able to

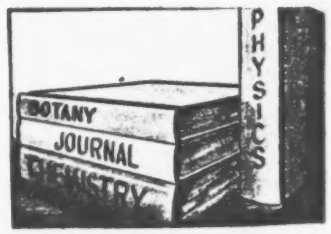
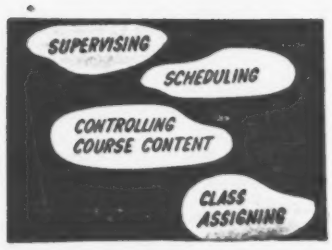
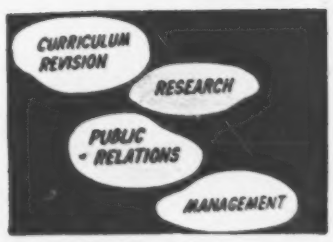
1) specify his role in evaluation of both teaching and learning effectiveness,
2) describe the differences between standard (norminative) evaluation and criterion evaluation,
3) outline a specific plan for effective evaluation of the present science education curriculum.

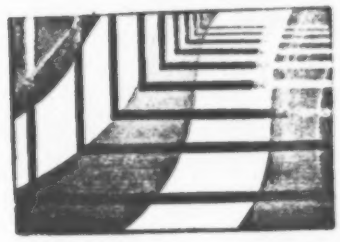
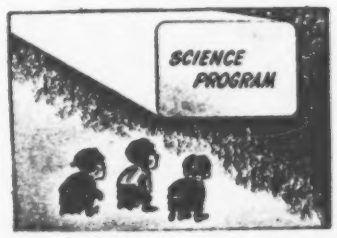
Evaluation

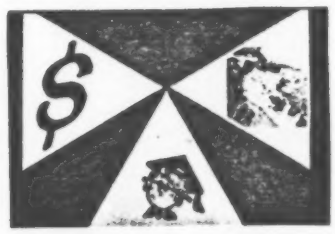
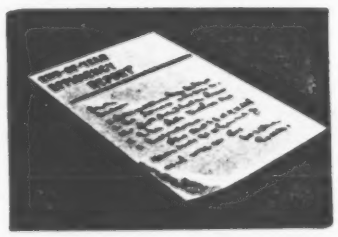
SOUND	VISUALS
1. Evaluation is a daily duty of every science supervisor. Your specific activity will differ according to local needs, but criteria are necessary for assessing:	
2. preparation and skills of new science teachers entering the system,	
3. aptitudes and performance of experienced teachers as a basis for establishing class assignments in grade levels and subject areas,	
4. appointments to committees and projects,	

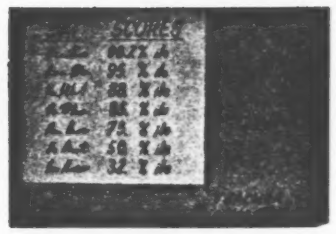
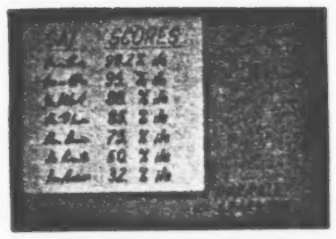
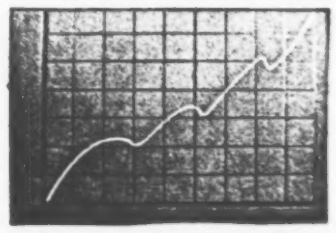
SOUND	VISUALS
5. salary increments and professional benefits such as graduate study,	
6. degree of student learning.	
7. In addition, science supervisors must continually evaluate the design of the science program as a whole.	
8. Is the basic philosophy of the science program adequate?	
9. Does the science program meet the pupils' needs?	

SOUND	VISUALS
10. Does it meet the needs of the community?	
11. In addition to applying sound evaluative techniques in your own system, you must keep current on research in new techniques. The value of this research, as well as its applicability, must be established relative to local needs.	
12. You must continuously evaluate your <u>own</u> professional strengths and weaknesses, asking such questions as:	
13. What formal courses might be helpful to me?	

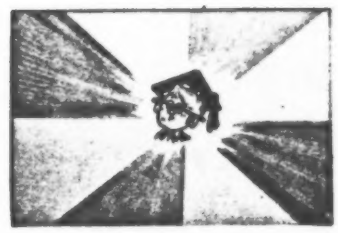
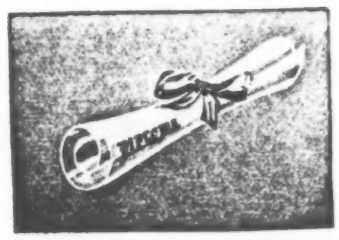
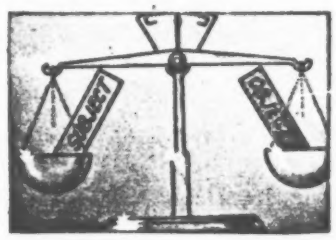
SOUND	VISUALS
14. What should I read to keep up in my field?	
15. Where am I having the most difficulty? The greatest success?	
16. <u>The process of evaluation manifests itself in the science supervisor's decisions in every function he performs, in every sphere of activity</u>.	
17. Evaluations must be made of curriculum, research, public relations, management, teachers, and students.	

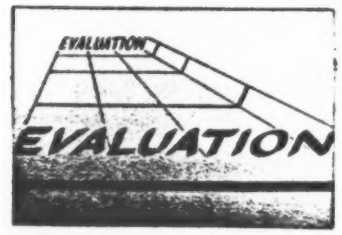
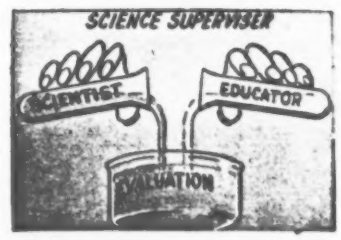
SOUND	VISUALS
18. All evaluations must be as objective as possible. Criteria for evaluation must be based on measurable standards.	
19. In dealing with human beings, however, objective criteria must not become a rigid standard since certain areas are immeasurable. Your trained perception plays an important role; often you will need to make subjective value judgments.	
20. When a school system's science program is viewed in relation to the needs and demands of the community, subjectivity plays an important role, for....	

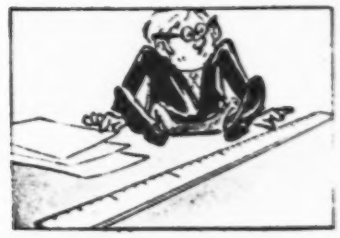
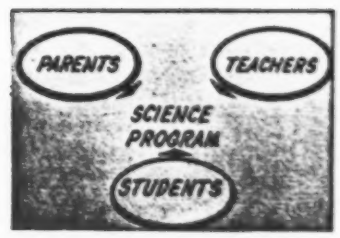
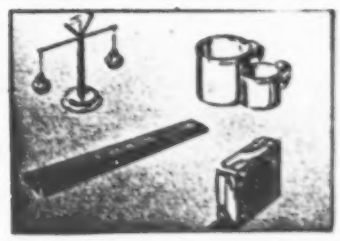
SOUND	VISUALS
21. ....each school system is unique in terms of finances, community support, and student response. Rigid objective criteria do not always match the situation exactly.	
22. Again, on a more personal level, subjective involvement often causes problems.	
23. In many school systems, the science supervisor is called upon to evaluate the science teachers.	
24. Even in cases where you are not actually the evaluator, you have a responsibility to help set up <u>objective</u> evaluation criteria by which valid judgments of teacher effectiveness can be made.	

SOUND	VISUALS
25. Why can't pupils' development be a major basis for teacher evaluation?	
26. If the science supervisor evaluates how much each individual has learned, that evaluation is much closer to being an objective assessment of the teacher.	
27, Evaluation of pupil learning will also provide an effective measure of the overall educational program.	
28. Effective evaluation provides a basis for either changing or maintaining the existing instructional system.	

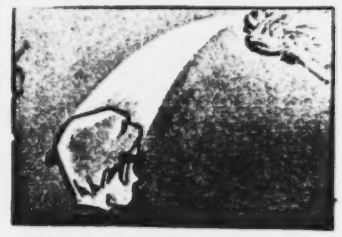
/50

SOUND	VISUALS
29. <u>Therefore, the learner should be the focal point of all evaluation</u>.	
30. As has just been pointed out, subjectivity often enters into value judgments made by science supervisors.	/51
31. In contrast, however, most science supervisors have academic preparation in one or more of the sciences where stress is placed on obtaining measurable data.	
32. <u>Being so placed in a position between that of scientist and educator, you, the science supervisor, must integrate both approaches into a meaningful evaluation</u>.	

SOUND	VISUALS
33. Perhaps more than supervisors in other academic areas, the science supervisor should have an expanded concept of evaluation. The field of science is rapidly changing, and the evaluative techniques employed must be flexible enough to meet new demands.	
34. As a result of your background in research and science, you should be more acutely aware of contemporary evaluative methods and techniques than supervisors in other academic areas.	
35. This increased awareness can make the science supervisor a leader in applying modern objective evaluation techniques.	

SOUND	VISUALS
36. Whenever possible, judgment must be based on measurable, observable performance of both individuals and programs.	
37. However, you must not overlook the attitudes and opinions of the students, the parents, and the teachers toward the science program.	
38. The science supervisor must work toward better measuring devices, especially in the areas of attitudes and opinions, in order to obtain the information he needs.	
39. Just as a scientist works toward his goal of a verified hypothesis,	

/53

SOUND	VISUALS
40. ....the science supervisor works toward the goal of verified learning.	

/54

EVALUATION PACKAGE

B I B L I O G R A P H Y

Larry J. Bailey, "Close Procedure--A Technique for Evaluating Instructional Materials," Journal of Independent Teacher Education, 6:4 (June 1969), pages 57-60.

Le Von Balzer, "Nonverbal and Verbal Behaviors of Biology Teachers," American Biology Teacher, 31:4 (April, 1969), pages 226-29.

Dale L. Bolton, "The Effect of Various Information Formats on Teacher Selection Decisions," American Educational Research Journal, 6:3 (May 1969), pages 329-47.

Ronald J. Burke, "A Plea for a Systematic Evaluation of Training," Training Development Journal, 23:8 (August 1969), pages 24-9.

Robert W. Consalvo, "Evaluation and Behavioral Objectives," American Biology Teacher, 31:4 (April 1969), pages 230-32.

Peter Crane and Clark C. Abt, "A Model for Curriculum Evaluation," Educational Technology, IX:10 (October 1969), pages 17-25.

Robert Emans, "Teacher Attitudes as a Function of Values," Journal of Educational Research, 62:10 (July-August 1969), pages 459-63.

John E. Erickson, "On the Development of School Supervisory Personnel: A Case in Point," Journal of Teacher Education XX:1 (Spring 1969), pages 66-9.

Thomas P. Evans, "A Category System for Teacher Behaviors," American Biology Teacher, 31:4 (April 1969), pages 221-25.

John J. Koran, Jr., "Supervision: An Attempt to Modify Behavior," Educational Leadership, 26:8 (May 1969), pages 754-57.

Frank E. Liguori, "Criteria for Evaluation of Educational Resources: Printed Instructional Material," National Business Education Association Yearbook, number 7, pages 141-47.

Jack M. Ott, "Classification System for Decision Situations: An Aid to Educational Planning and Evaluation," Educational Technology, 9:2 (February 1969), pages 20-3.

Robert S. Randall, "An Operational Application of the CIPP Model for Evaluation," Educational Technology, 9:7 (July 1969), pages 40-4.

Chrystine R. Shack, "Evaluative Processes, Tools, and Techniques: The Conceptual Framework for the Evaluative Process," National Business Education Association Yearbook, number 7, pages 33-40.

Martin I. Taft, "A Systematic Method for Evaluating Teachers," Journal of Engineering Education, 59:7 (March 1969), pages 852-7.

SOURCES OF INFORMATION FOR MEDIA SELECTION

The Audio-Visual Equipment Directory: A Guide to Current Models of Audio-Visual Equipment. Fairfax, Virginia: National Audio-Visual Association, Inc. ($7.00)

An annual directory, produced by the trade association of audiovisual hardware manufacturers, includes pictures and specifications of the equipment. /57

Audiovisual Marketplace: A Multimedia Guide, second edition. New York City: R. R. Bowker Company, 1970. ($12.25)

The most comprehensive directory of hardware and software manufacturers/producers/distributors. Includes listings of media organizations, periodicals, film libraries, educational radio and television stations.

Educators Guide to Free Science Materials. Randolph, Wisconsin: Educators Progress Service, 1968. ($8.25)

Lists free films, filmstrips, tapes, transcriptions, and other printed material.

Educational Products Report. Published monthly, October-June. Educational Products Information Exchange, 386 Park Avenue South, New York, N.Y. 10016.

Each issue covers a specific product; e.g., recent issues have included black studies materials, science kits, programmed instruction materials, 8mm projectors and films. The Report contains objective data on equipment and materials which will save weeks of staff time in searching through promotional literature to gather information for purchasing decisions.

Carl Hendershot. Programmed Learning: A Bibliography of Programs and Presentation Devices, fourth edition. Bay City, Michigan: Carl Hendershot, 4114 Ridgewood Drive. ($27.50, including supplements through June 1970)

Index to 16mm Educational Films, second edition. New York City: R. R. Bowker Company, 1969. ($38.50)

Contains 35,000 entries for commercially available 16mm films. More than 10,000 entries in the natural and physical sciences.

Index to 8mm Educational Film Loops, first edition. New York City: R. R. Bowker Company, 1969. ($16.00)

Approximately 10,000 entries for commercially available 8mm film loops.

/58

Index to 35mm Educational Filmstrips, second edition. New York City: R. R. Bowker Company, 1969. ($34.00)

Some 25,000 entries.

Index to Educational Transparencies, first edition. New York City: R. R. Bowker Company, 1969. ($20.00)

Some 15,000 entries.

Harris H. Shettel and Pamela C. Reilly, "Evaluation of Existing Criteria for Judging the Quality of Science Exhibits," AV Communication Review, 14:4 (Winter 1966), pages 479-488.

EDUCATIONAL TECHNOLOGY PROJECT

PRE-POST

criterion assessments

SET I EVALUATION

For this report the desired responses have been included on the sheet opposite each question.

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

CRITERION ASSESSMENT

SET I PACKAGE EVALUATION

DATE _____ NAME _____

STIMULUS	RESPONSE
1. List at least three (3) evaluative duties in regard to the teaching staff.	a) Interview applicants. b) Appointment to committees. c) Assignment to classes. d) Set up standards for evaluation of prospective and experienced teachers. /60 (Similar answers acceptable)
2. List at least three (3) aspects of a new science curriculum that must be evaluated.	a) Total program. b) Philosophy. c) Relevancy. d) Pupil need. e) Community need. f) Flexibility.

CRITERION ASSESSMENT

SET I PACKAGE EVALUATION

DATE _____ NAME _____

STIMULUS	RESPONSE
3. State the main purpose of evaluating a science program.	Minimally this must include the concept that "the measureable learning of the individual pupil will be increased". /61
4. Explain the statement: "The science supervisor is in a position between that of scientist and of educator."	Minimally, this must incorporate the objective measureable approach of the scientist, and the subjective, difficult-to-measure approach of the educator, plus the necessity of integrating both approaches for a meaningful evaluation.

CRITERION ASSESSMENT

SET I PACKAGE EVALUATION

DATE _____ NAME _____

STIMULUS	RESPONSE
5. Complete the following statement: "Just as a scientist works toward the goal of a verified hypothesis, the science supervisor works toward the goal of _____."	Verified learning; Validated learning; Measureable learning. (Any are acceptable) /62
6. Demonstrate knowledge of the role of objectivity in developing standards by writing at least one objective criterion for evaluating prospective science teachers.	Any measureable criterion acceptable.

PROTOTYPE

APPLICATION HANDBOOK

for

MANAGEMENT

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Nat'l Sci. Teachers Asso.

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

SET I

This material is for validation purposes only.
DO NOT DISTRIBUTE OR DUPLICATE.

The following package on Management
was prepared by

Writer: Camille Marker

Art Preparation: Creston B. Coffield
Louis M. Custodio
Jack Martinelli

Photography: Mary McGovern
E. Wayne Nobles
George H. Ziener

Audio: Douglas Boyd

Editing & Revision: Clarice Leslie
George H. Ziener

Criterion Assessments: Virginia Trowbridge

Manuscript Coordinator: Dorothy B. Lutz

TABLE OF CONTENTS

MEDIA SHEET

INTRODUCTION

SCRIPT

BIBLIOGRAPHY OF SUPPORT MATERIAL

CRITERION ASSESSMENTS - PRE/POST

MEDIA SHEET

The following media are necessary for the presentation of this package:

1 set of SLIDES on MANAGEMENT.

1 audio cassette TAPE on MANAGEMENT. /66

1 carousel SLIDE PROJECTOR.

1 audio CASSETTE TAPE RECORDER.

(Optional)

1 CASSETTE SLIDE SYNCRONIZER by Norelco or its equivalent.

INTRODUCTION

Purpose:

To expose supervisors to an imposing number of management functions in order to stress the importance of good management techniques (systems) and the establishment of a priority system placing human needs above paperwork.

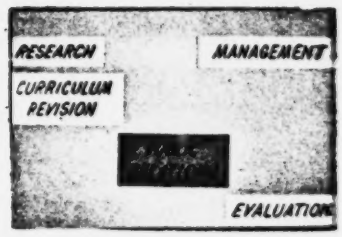
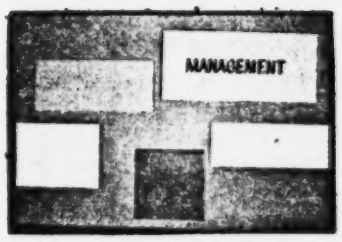
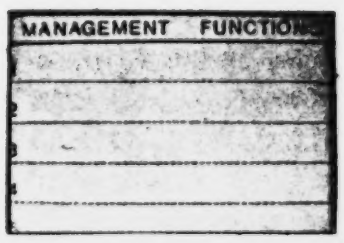
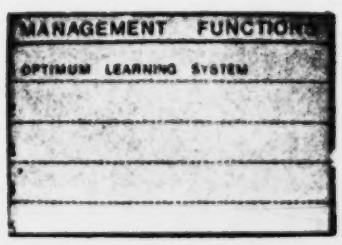
/67

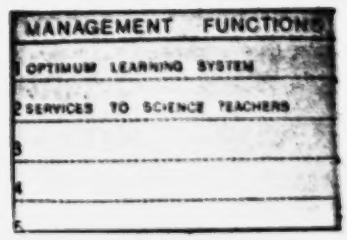
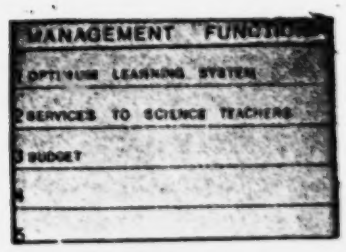
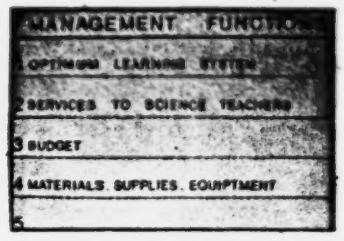
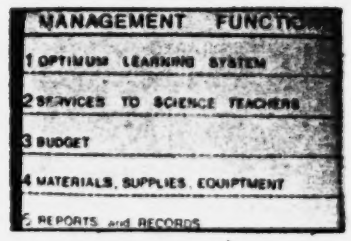
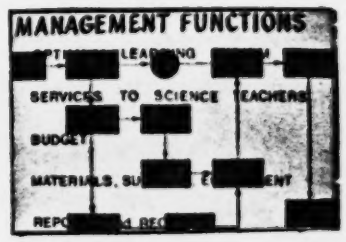
Objectives:

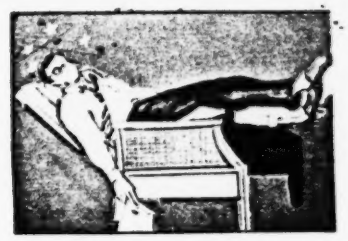
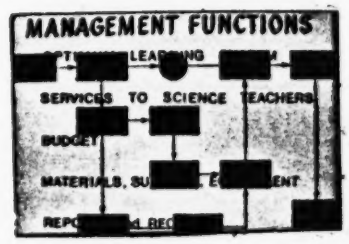
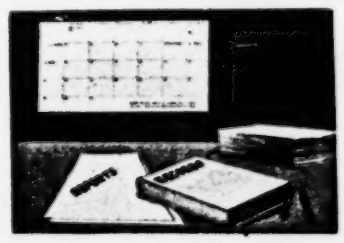
The supervisor will be able to

1) identify at least ten specific management functions and place them in a priority order ranking people over paper,
2) specify at least three reasons for establishing good management techniques (systems),
3) present justifications for either changing his present order of priorities or keeping it.

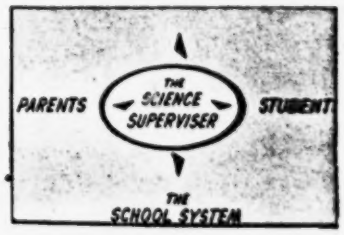
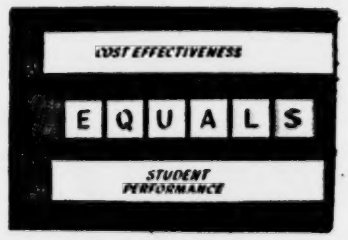
Management

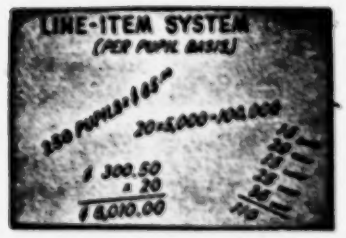
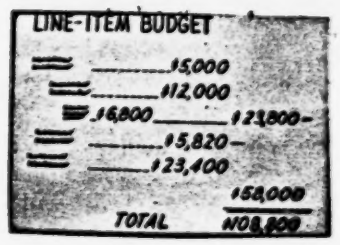
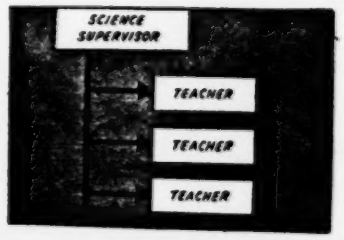
SOUND	VISUALS
1. There are five categories of functions of science supervisors: Management, Evaluation, Research, Curriculum Revision, and Public Relations. Of these, that of Management is the broadest and most comprehensive.	
2. It is only through the understanding and utilization of management that all the other categories - and their functions - can be given their proper weights and balances.	
3. The many functions of management can be placed into five groups:	
4. Research, design, implementation, and evaluation of <u>optimum learning systems</u>....	

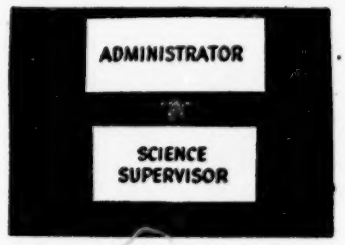
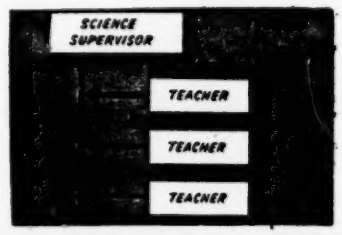
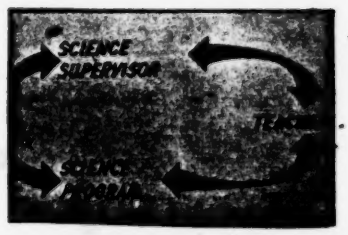
SOUND	VISUALS
5. Provision of services to science teachers....	
6. Preparation and allocation of the budget....	
7. Evaluation and distribution of professional materials, supplies, and equipment....and....	
8. Preparation of reports and record keeping.	
9. Within these five groups are more than 40 management functions. A complete list of these functions is available in your handbook....	
10. Overwhelmed?	

SOUND	VISUALS
11. It will be easy for you to become overwhelmed by the magnitude of the functions in management, <u>if</u> you allow it to happen.	
12. But not all supervisors perform all of these functions. Nor are we suggesting that that they should; it will depend on your particular school situation.	
13. Records and reports <u>alone</u> could monopolize your time, <u>if</u> you allow it.	
14. Many supervisors are questioning the time alloted for their various responsibilities.	
15. Should you be primarily engaged in keeping books, making reports, keeping records,	

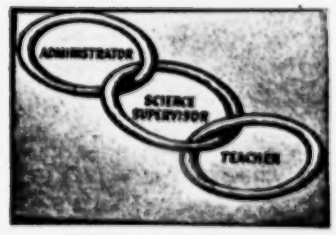
/70

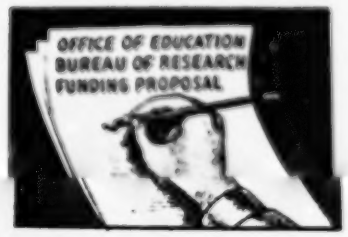
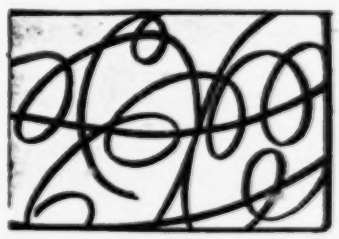
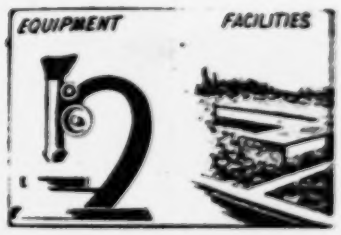
SOUND	VISUALS
16. or should you be initiating activities involving students, faculty, administration, parents, and community?	
17. Paper work cannot be eliminated, but emphasis on it can be minimized, if you desire to do so.	
18. Let us consider two science supervisors at work on their budget.	
19. One determines his budget by evaluating the effectiveness of all the programs in the science	

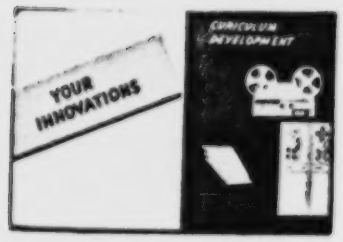
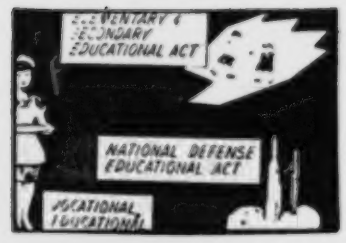
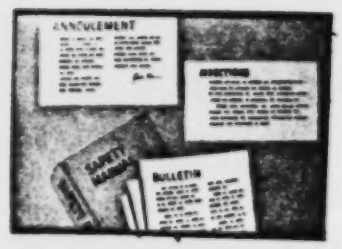
SOUND	VISUALS
19. Continued. curriculum in terms of student performance.	
20. The other uses a conventional budgeting method.	 /72
21. But you say, "my school district has a line-item budgeting system, and I'm allocated funds for the science program on a per pupil basis ---- I really have no choice".	
22. Do you really have no choice?.... Often it is assumed that the leadership role of the supervisor be directed only toward the teaching staff of the school system.	

SOUND	VISUALS
23. Most supervisors do not realize the challenge and necessity of educating, influencing, and persuading <u>their</u> superiors ---- principals, superintendents, and other administrators.	
24. And .... <u>receiving</u> education and direction from the teaching staff of their schools.	
25. The role of the teachers, in relation to your responsibilities as a supervisor, is a vital one. Their involvement in decision making is a critical necessity to your successful functioning as a supervisor, and to the successful operation of the total science program.	

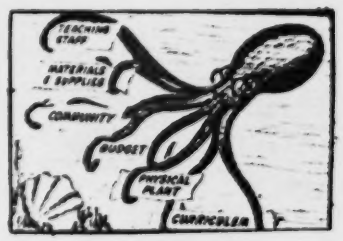
/73

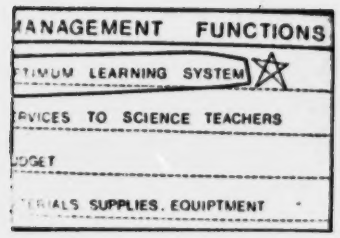
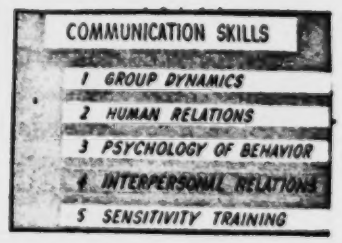
SOUND	VISUALS
26. As a supervisor, you must act as a motivating force for the teaching staff,	
27. and a liaison between them and the administration....keeping open the lines of communication in all directions.	
28. As a supervisor you are doing your school system an important service by educating the administration in effective resources allocation.	
29. In planning the budget for your school system, you can exercise greater responsibilities in the allocations of funds. This can be done by more closely scrutinizing the effectiveness of the science curriculum and evaluating it on the basis of student learning.	

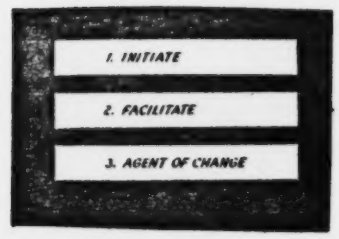
SOUND	VISUALS
30. Hopefully, this would enable you to eliminate costly programs whose effectiveness and results are dubious.	
31. As a supervisor, you may be required to write proposals for government funded projects related to your science program.	
32. The red tape involved can be exasperating.	
33. But obtaining outside funds for equipment and facilities, as well as for innovations and curriculum developments, is usually an important part of an expanding science program.	

SOUND	VISUALS
34. A science supervisor must know the sources of those funds, such as the numerous Federal Education Acts,....	
35. ....the foundations and private industries....	
36. You must have the expertise to write the necessary proposals for these funds.	
37. The announcements, notices, and bulletins you may have to prepare, in addition to the directions for use of supplies, and manuals for safety,	
38. all the bibliographies of materials and latest research which need to	

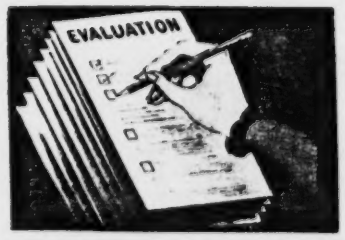
/76

SOUND	VISUALS
38. Continued. be made up, can involve more work than one person can really handle.	
39. Also, you may be expected to coordinate the total educational program in science in your school district.	/77
40. When a new science facility is built you will be expected to decide what equipment will be necessary and to determine if the physical design is adequate to house present and future software.	
41. Through the application of management, you the science supervisor, can change and direct your role. There is opportunity for you to choose those functions which you consider the most important for your particular situation.	

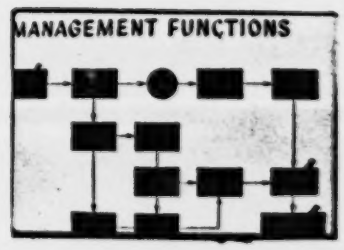
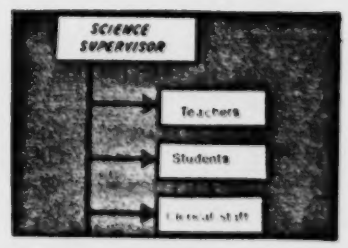
SOUND	VISUALS
42. And establishing priorities among your functions is as important as actually carrying out those functions.	
43. In any management situation, whether it is in a business, an institution, or a school system, the importance of effective communications cannot be over emphasized.	
44. The average adult human being spends over half his waking time on the job - working with others.	
45. Thus, it is necessary for a good supervisor to develop and acquire those skills which will enable him to communicate and function as a leader, and	

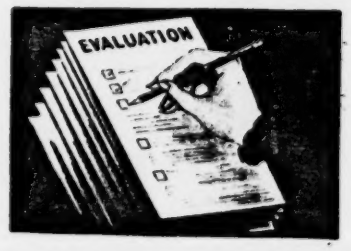
SOUND	VISUALS
46. be a catalyst of activities involving his fellow teachers, students, administrators, parents, and the community.	
47. One of the most important responsibilities of a supervisor is the setting up of in-service workshops. It's not easy; it can be much more difficult than working on your budget.	
48. Such workshops demand utilization of your group dynamics skills. It is you who must create an environment in which teachers are free to discuss their opinions and ideas.	
49. Scheduling periodic conferences with principals, superintendents, and school board members may also be part of your responsibility.	

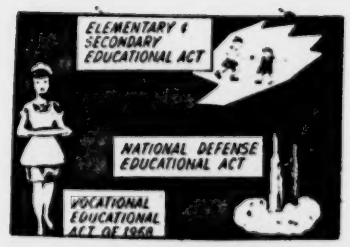
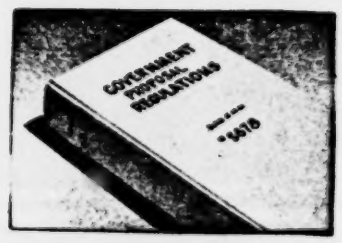
/79

SOUND	VISUALS
50. Because these people are not directly involved in science education, you'll have to explain the philosophy of the science program to them,	
51. the plans and curriculum which will be necessary to implement the program, and be able to interpret and defend requests for budget allocations.	
52. Some of you may be expected to interview and evaluate prospective science teachers for the district. All of you need to be aware of the teaching methods and techniques utilized by the teaching staff.	
53. As such, it is necessary for you to establish a system of evaluative criteria which will enable the	

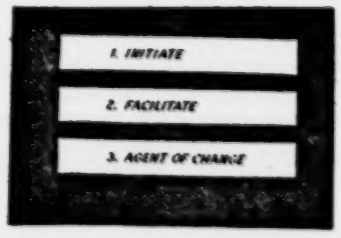
/80

SOUND	VISUALS
53. Continued. proper evaluation of science teachers to be made with objectivity and professional responsibility. Once set up, this system permits you to request a recap of evaluation data on all science teachers, when needed, for your own utilization.	/81
54. The management functions of the science supervisor are comprehensive and <u>can be</u> overwhelming.	
55. Your performance as a manager depends on your understanding and utilization of all these functions.	
56. Your <u>involvement</u> will depend on how well you delegate responsibilities to the science teachers, students, and clerical staff of your school district.	

SOUND	VISUALS
57. A working advisory board of your best teachers and students, your secretary (if you have one), and any interested lay people will determine the success or failure of your role as manager.	
58. With <u>adequate direction</u> and <u>feedback</u> coming from the science supervisor, such a group can assist in the performance of management functions.	
59. They can....establish a system of teacher evaluation criteria....	
60. ....locate consultants and speakers for in-service training programs....	

SOUND	VISUALS
61. ....determine equipment and supply needs from a teacher/ student viewpoint....	
62. ....execute and maintain a science teacher project to set up a bibliography of current materials and research....	
63. ....investigate sources of funds for science education development and innovative projects....	
64. ....participate in the process of proposal writing....	
65. But remember....the effectiveness of the board depends on what you choose to make of their role. To delegate responsibility is to assume things won't always end up the way you envisioned the final	

/83

SOUND	VISUALS
65. Continued. product. Leadership is the ability to listen and learn as well as to give direction.	
66. The science supervisor's role of manager is difficult, demanding, dynamic--It requires that the person in that role engage in a continual process of professional growth--You will suffer from frustration, pressures, and errors in judgement as you involve others in the management process.	184
67. However, as you suffer, you will outgrow that feeling of being overwhelmed. Priorities among your functions will be established, as you begin to function as a <u>leader</u> and a <u>catalyst</u> of activities involving teachers, students, administrators, parents, and the community.	

MANAGEMENT PACKAGE

B I B L I O G R A P H Y

Clyde Carter, "What Management Techniques Can the School Learn from Industry?" (Paper presented at the North Central Association Annual Meeting, March 26, 1969.), North Central Association Quarterly, 43:4 (Spring 1969), pages 353-60.

Desmond L. Cook, Program Evaluation and Review Technique: Applications in Education, Cooperative Research Monograph No. 17. Washington, D.C.: U.S. Department of Health, Education, and Welfare, Office of Education, 1966. (Government Printing Office #FS5.212:12024)

N. Richard Diller, "The Management of Professional Educators; Management Development Needs in the Educational Field," Training Development Journal, 23:5 (May 1969), pages 48-9.

John E. Fleming, "Behavioral Insights and Management Gaming; Using a Questionnaire for Behavioral Feedback in Management Gaming," Training Development Journal, 23:2 (February 1969), pages 14-21.

E. W. Menzel, "Science Teaching and Sensitivity Training?" Science Teacher, 36:8 (November 1969), pages 17-20.

Charles C. Poindexter, "Planning-Programming-Budgeting Systems for Education," High School Journal, 52:4 (January 1969), pages 206-17.

Leonard C. Silvern, "LOGOS: A System Language for Flowchart Modeling," Educational Technology, 9:6 (June 1969), pages 18-23.

"What Does EPIE have in store for you?," School Management, 11:3 (March 1967), pages 96-102+.

EDUCATIONAL TECHNOLOGY PROJECT

PRE-

criterion assessments

SET I MANAGEMENT

For this report the desired responses have been included on the sheet opposite each question.

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

PRE - CRITERION ASSESSMENT

SET I PACKAGE MANAGEMENT

DATE _____ NAME _____

STIMULUS	RESPONSE
1. You have a set of cards which list various management functions. Put them in the order of your priority. a) In the response column indicate the top five functions by letter and briefly justify why you ranked each of them as you did. b) Taking either the rejected cards or the lowest four cards list the functions by letter and very briefly justify your ranking.	Any order is acceptable. The requirement being supervisor identification and justification of his own priorities. /87

LIST OF MANAGEMENT FUNCTIONS

A ASSIST IN SECURING AND USING INSTRUCTIONAL MATERIALS

B ATTEND AND PARTICIPATE IN ADMINISTRATIVE STAFF MEETINGS

C ATTEND CONFERENCES AND PARTICIPATE IN COMMITTEE WORK WITH GENERAL AND SPECIAL SUPERVISORS

D COMMUNICATE THROUGH TALKS, BULLETINS, AND ABSTRACTS SIGNIFICANT NEW RESEARCH DEVELOPMENTS TO THE TEACHING STAFF

E CONDUCT CONFERENCES WITH INDIVIDUAL TEACHERS CONCERNING PROBLEMS IN TEACHING

F CONDUCT SEMINARS FOR DISCUSSING PROBLEMS AND THEIR SOLUTIONS

G CONFER WITH PRINCIPALS AND SUPERINTENDENTS IN DEVELOPMENT OF PHILOSOPHY AND PLANS

H CONFER WITH SALESMEN CONCERNING AUDIO-VISUAL MATERIALS AND OTHER INSTRUCTIONAL AIDS

I PLAN AND DIRECT LOCAL WORKSHOPS FOR TEACHERS

J PREPARE ANNOUNCEMENTS, NOTICES, BULLETINS AND NEWSLETTERS FOR SCIENCE PERSONNEL

K PREPARE ANNUAL REPORTS ON PROGRESS, ACTIVITIES AND PLANS

L PREPARE BIBLIOGRAPHIES CONCERNING LATEST SCIENTIFIC AND EDUCATIONAL RESEARCH

M PREPARE BIBLIOGRAPHIES OF AVAILABLE MATERIALS

/88

N PREPARE HANDBOOKS AND SYLLABI FOR SCIENCE SUBJECTS

O PREPARE SPECIAL REPORTS ON PARTICULAR PROBLEMS AND POLICIES AS THESE AFFECT THE SCIENCE INSTRUCTIONAL PROGRAM

P RECOMMEND SCIENCE TEACHERS FOR SALARY INCREMENTS, TRANSFERS, APPOINTMENTS, AND ASSIGNMENTS

Q COORDINATE THE TOTAL EDUCATION PROGRAM IN SCIENCE

R DISTRIBUTE PROFESSIONAL BOOKS ON LOAN BASIS

S EVALUATE AND SELECT BOOKS FOR PROFESSIONAL LIBRARY

T HELP TEACHERS SET UP SCIENCE FAIRS, EXHIBITS, AND OTHER SIMILAR ACTIVITIES

U INTERVIEW PROSPECTIVE SCIENCE TEACHERS

V KEEP PERMANENT RECORDS RELATING TO SCIENCE PERSONNEL

W ORDER EQUIPMENT

X PLAN AND ADMINISTER BUDGET FOR MATERIALS

Y SECURE PROFESSIONAL RECOGNITION FOR OUTSTANDING TEACHERS

Z WORK WITH COLLEGES IN THE IN-SERVICE TRAINING OF TEACHERS

/89

EDUCATIONAL TECHNOLOGY PROJECT

POST

criterion assessments

SET I MANAGEMENT

For this report the desired responses have been included on the sheet opposite each question.

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

POST - CRITERION ASSESSMENT

SET I PACKAGE MANAGEMENT

DATE _____ NAME _____

STIMULUS	RESPONSE
1. You have a set of cards which list various management functions. Put them in the order of your priority. a) In the response column indicate the top five functions by letter and briefly justify why you ranked each of them as you did.	Any order is acceptable. The difference in ordering of the cards should indicate increased job awareness toward learner and teacher needs and decreased emphasis on paper work.
b) Taking either the rejected cards or the lowest four cards list the functions by letter and very briefly justify your ranking.	

PROTOTYPE

APPLICATION HANDBOOK

for

PUBLIC RELATIONS

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Nat'l Sci. Teachers Asso.

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

SET I

This material is for validation purposes only.
DO NOT DISTRIBUTE OR DUPLICATE.

The following package on Public Relations was prepared by

Writer: Harold J. Maloney

/93

Art Preparation: Michael Eiss
Mary McGovern

Photography: Douglas Boyd

Audio: Douglas Boyd

Editing & Revision: Clarice Leslie
Mary McGovern
George H. Ziener

Criterion Assessments: Virginia Trowbridge

Manuscript Coordinator: Dorothy B. Lutz

TABLE OF CONTENTS

MEDIA SHEET

INTRODUCTION

SCRIPT

BIBLIOGRAPHY OF SUPPORT MATERIAL

CRITERION ASSESSMENTS - PRE/POST

MEDIA SHEET

The following media are necessary for the presentation of this package:

1 set of SLIDES on PUBLIC RELATIONS.

1 audio cassette TAPE on PUBLIC RELATIONS.

1 carousel SLIDE PROJECTOR.

1 audio CASSETTE TAPE RECORDER.

(Optional)

1 CASSETTE SLIDE SYNCRONIZER by Norelco or its equivalent.

INTRODUCTION

Purpose:

1) To present to the science supervisor a breakdown of the various publics he must work with.
2) To discuss each of these publics in detail identifying not only his responsibilities to them, but also, showing their needs and importance to him.

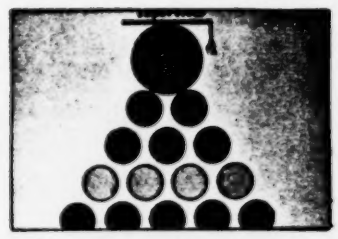
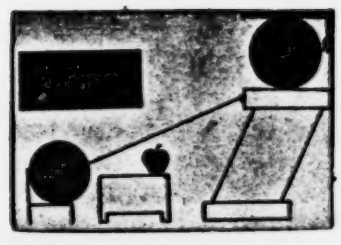
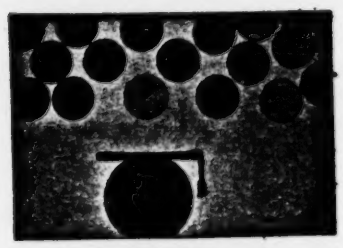
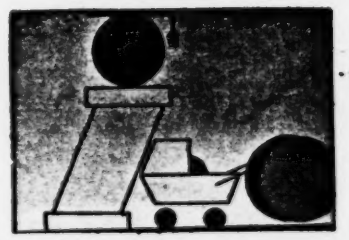
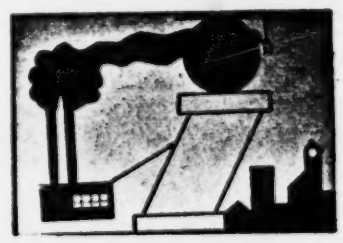
/96

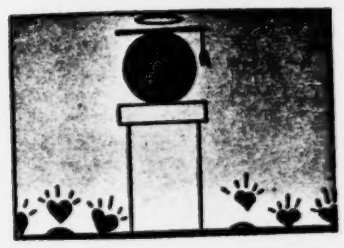
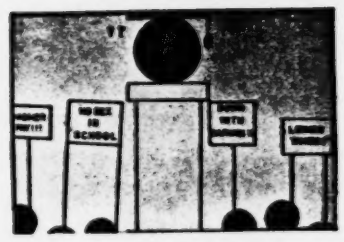
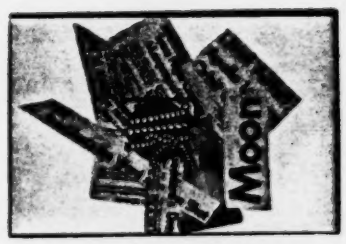
Objectives:

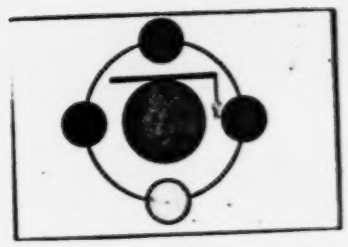
The science supervisor will be able to

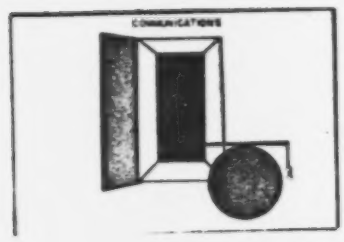
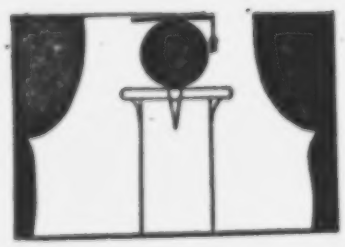
1) identify the major 'publics' he must work with,
2) present reasons for the involvement of each of the publics,
3) suggest at least one way of involving each of them in improving science education,
4) identify at least one positive result of involvement on the part of each public.

Public Relations

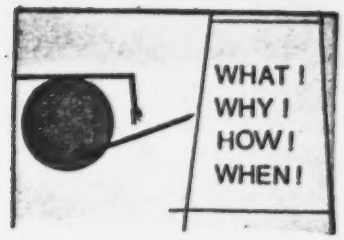
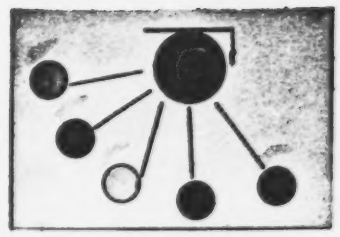
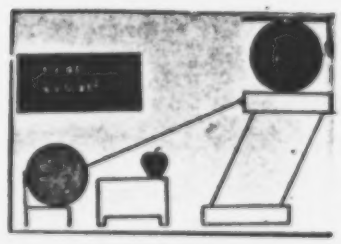
SOUND	VISUALS
1. Your success as a science supervisor depends on the support you receive from four different but related groups.	
2. Teachers,	
3. Students,	
4. Parents,	
5. and the Community.	

SOUND	VISUALS
6. Support from these groups was once given automatically to educators. Education was solely the concern of those trained and with experience in the educational system.	
7. Today, however, passive acceptance of the standard educational system is over. Within the school and in the community, voices are being raised demanding a role in the formulation of educational policy.	
8. Since World War II there have been staggering technological changes. Scientific accomplishments have assaulted, stunned, and captured public attention bringing them sharply to focus on the field of science. This increased public awareness has resulted in a corresponding increase of expectations with regard to improved school science programs.	

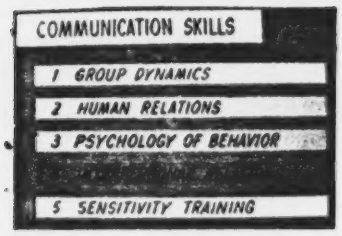
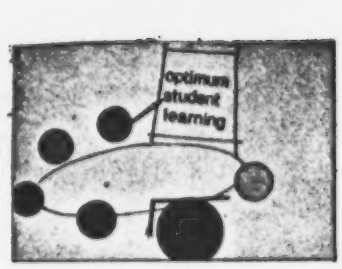
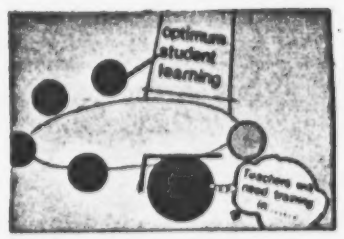
SOUND	VISUALS
9. As the person directly responsible for the content of the science curriculum, it is the supervisor who must justify the science programs, first to the school administration, and then to a public consisting of students, teachers, parents, and the community at large.	
10. The science supervisor is being challenged to provide leadership by channeling today's increased public awareness in education into support of creative new programs. He must develop sensitivity to the needs of the public, adapt the programs accordingly, and then have the ability to put these program ideas into action.	

SOUND	VISUALS
11. Today, the role of the science supervisor has expanded to include the art of public relations.	
12. In the classroom, the teachers lounge, administrative offices, in the homes and businesses of the community, the supervisor should create an atmosphere where there is an exchange of information, ideas, and problems. Only through such dialogue does public relations become communication.	
13. A science supervisor must initiate this communication if there is to be support for the science program and for necessary changes.... first he must inform the public....	

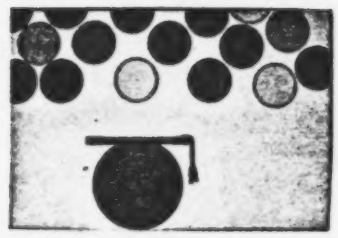
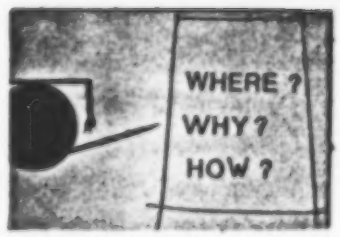
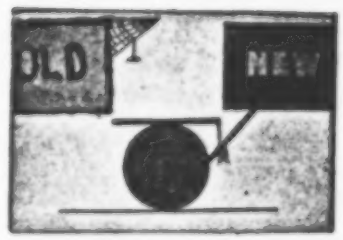
/100

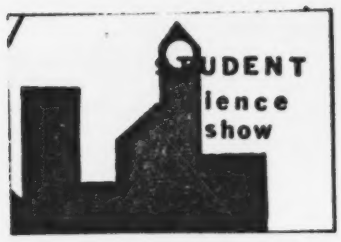
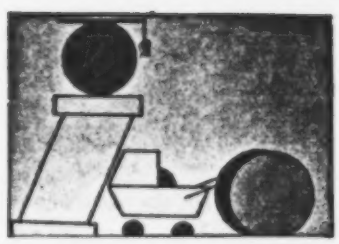
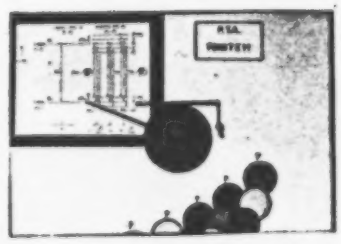
SOUND	VISUALS
14. What the present science program is. Why changes are necessary. How these changes can be accomplished. When the changes can be adopted.	
15. These questions must be answered by the science supervisor if the public is to be informed -- but, to inform is not to communicate. The supervisor then seeks comments, encourages questions, and directs discussion. An informed public will respond with reasonable thoughts and ideas on the science program.	
16. Begin with the teachers. A successful science program is impossible without their support. Some teachers are threatened by change. Other teachers will welcome change, but their enthusiasm needs direction. Still others resent anything that might create disruptions in their established routine.	

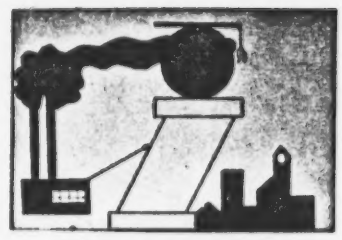
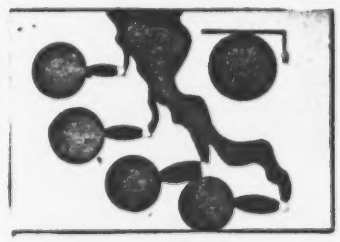
/101

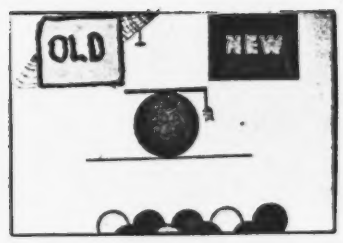
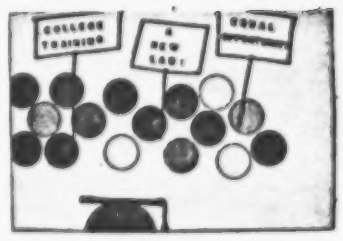
SOUND	VISUALS
17. Using the tools of communication the supervisor can deal with these varying teacher attitudes. If he can objectively lead group discussions, conduct inter-group consultations, and listen to feedback he should be able to evaluate and act upon what the teachers are saying.	
18. The supervisor will gain from teachers insight into student capabilities and limitations. This knowledge is vitally necessary in designing programs to increase individual learning.	
19. Also, increased communication will help the supervisor identify teachers who might participate in any new program and to determine the type of training these teachers will need to introduce new curriculums and teaching methods into the classroom.	

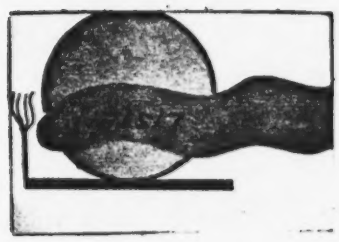
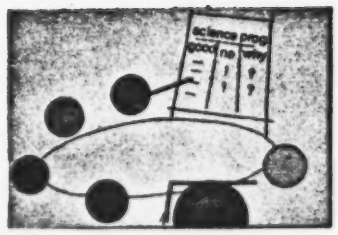
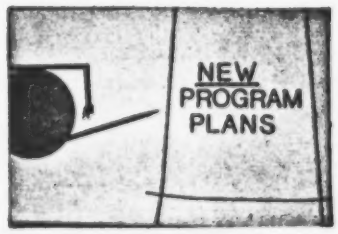
/102

SOUND	VISUALS
20. Students are eager for change. Provide them with an opportunity to participate in the decision making process. Listen and learn from their opinions on course changes, teacher ratings, and program activities. Encourage them to talk with teachers and clarify their ideas on the science program by answering the following questions:	 /103
21. Where can changes be made in the present science program? Why are these changes necessary? How can these changes be accomplished?	
22. The supervisor in turn must respond to the students ideas and work to help them identify their responsibilities as participants in a new program.	

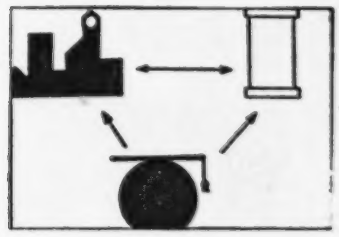
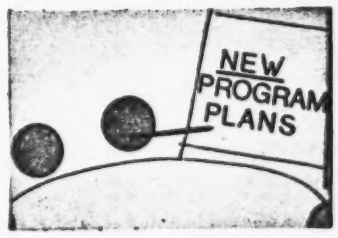
SOUND	VISUALS
23. Student support will make the job of public relations outside the school much easier. Students can explain the changes to their parents, and create exhibits and projects to aid in obtaining support from the business and civic community. Student involvement and enthusiasm is a major factor in selling a program.	 /104
24. Parents form another group the science supervisor must be concerned with. Parents are often misinformed about what is going on in school. It is essential that their misinformation become information.	
25. At a PTA meeting discuss with parents the change in approach to science teaching. Demonstrate how recent scientific discoveries	

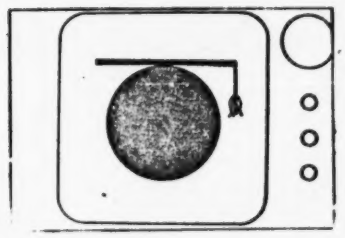
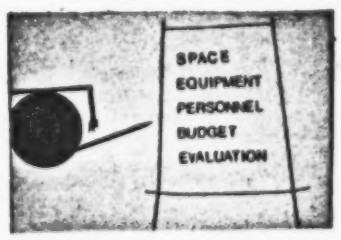
SOUND	VISUALS
25. Continued. demand teaching a scientific process rather than merely memorization of predetermined facts. A question and answer period will result in parents understanding - for example - why their children are using new science books this year. Parents are proud when they feel their school is keeping up with the times. Encourage their pride.	/105
26. Another group with whom the supervisor must communicate is the community-at-large. The composition of and the conflicts within that community will largely determine what approach he must take.	
27. For example, a fairly straightforward approach can be employed in a relatively	

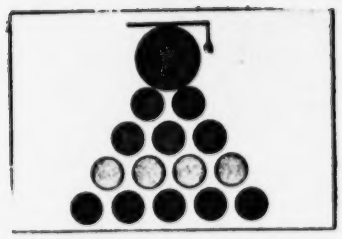
SOUND	VISUALS
27. Continued. homogeneous community which enjoys a large degree of social and economic integrity.	/106
28. Usually in these communities, schools have always provided educational programs of excellent quality, and as a result there is a degree of confidence in the school leadership. Thus, the supervisor can provide information about proposed programs, demonstrate the relevancy of new curriculum content, and feel confident that his audience will be attuned to the necessary changes.	
29. On the other hand, in communities with large concentrations of minority groups, the quality of education has generally been poor. In these areas, people are demanding a better education for their children.	

SOUND	VISUALS
30. The science supervisor must learn how to listen and understand what the community's voice is saying. Real effort must be exerted in establishing a dialogue between the school and minority families.	
31. The supervisor can establish a group representing the community. Then, provide the members with information on the present and proposed science program and ask the group to evaluate and formulate plans for new programs.	
32. He must objectively listen to feedback from the community on educational goals and proposals. Evaluate what is being said....channel these ideas into proposals from the group.... incorporate these proposals into program development plans.	

/107

SOUND	VISUALS
33. After such dialogue the supervisor must determine whether the program meets the needs of the students within the community. It is understandable to want all young people to reach for the moon. But confronted with the economic and social realities of the community, it might be far wiser to develop students' ability to deal effectively with the task of living on the earth.	
34. When all interests have been compromised and a plan formulated, the supervisor should turn over to the group some responsibility for informing civic and business groups in the community about the curriculum changes.	

SOUND	VISUALS
35. Use the news media to obtain support for new programs. Participation in radio and television broadcasts and publicizing science exhibits represent ways of keeping the community in touch with the school. If you can be interesting, the mass media will be interested.	
36. Within the school, it has always been necessary, as it is now, to have open lines of communication with school administrators. Without their approval, any changes in existing programs are impossible.	
37. The supervisor must be able to sell new ideas to the administrators. Before approaching the administration, do your homework. Anticipate questions and prepare answers to problems of space, equipment, personnel, finances,	

SOUND	VISUALS
37. Continued. and evaluation. Show why the public will give its support. The burden of proof lies with the person advocating change.	/110
38. Public relations provides groundwork for utilizing potential human resources available to a science supervisor: teachers, students, parents, the community, and the school administrators. This potential is realized only when the supervisor creates an atmosphere where communication becomes a two way process.	

PUBLIC RELATIONS PACKAGE

B I B L I O G R A P H Y

Gene C. Fusco. Improving Your School-Community Relations Program. Englewood Cliffs, New Jersey: Prentice-Hall, 1967.

Floyd W. Matson and Ashley Montagu. The Human Dialogue, Perspective on Communication. New York City: Free Press, 1967.

National Association of Broadcasters. If you Want Air Time: A Handbook for Publicity Chairmen. Washington, D.C.: Public Relations Service, National Association of Broadcasters, 1771 N Street, N.W., Washington, D.C. 20036.

National Association of Broadcasters. So You're Going on TV. Washington, D.C.: Public Relations Service, National Association of Broadcasters, 1771 N Street, N.W., Washington, D.C. 20036.

National School Public Relations Association. Public Relations Gold Mine series.

10-volume bookshelf available. Each volume is an annual overview of the best PR ideas and suggestions available from National School Public Relations Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

National School Public Relations Association. This is Public Relations series; titles include "Education's New Language," and "What is Classroom Public Relations?" Washington, D.C.: National School Public Relations Association, 1201 Sixteenth Street, N.W.

Public Relations Society of America, Inc. Films About Public Relations and Related Subjects (mimeographed). New York City: Information Center, Public Relations Society of America, Inc., 845 Third Avenue.

Harold Rand, "Public Relations: Its Place and Function in Society," Journal of Aesthetic Education, 3:3 (July 1969), pages 65-73.

School Management. "How to Get Your Staff to Accept Change," School Management, 11:3 (March 1967), pages 117-21+.

EDUCATIONAL TECHNOLOGY PROJECT

PRE-POST

criterion assessments

SET I PUBLIC RELATIONS

For this report the desired responses have been included on the sheet opposite each question.

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

DATE _____ NAME _____

STIMULUS	RESPONSE
1. After intensive research, you have decided that the science curriculum should be more research oriented. The new thrust of the program will include the study of and individual research into the sex life and sterilization possibilities and problems of fruit flies, ticks and fleas. (A) What groups will you need to be involved with in order to secure the support for your program? (B) How will you secure support from each group?	a) Teachers, students, parents, and community. b) <u>Teachers</u> /11 Listen and seek their input. Acquaint teachers with their role and functio in the change. Help them communicate necessity of change. <u>Students</u> Convey relevance of course to their life. Show that your desire for change equals their Encourage them to discuss plans for change with their parents. <u>Parents</u> Demonstrate a lesson at P.T.A.

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

DATE _____ NAME _____

STIMULUS	RESPONSE
1. Continued	Explain and demonstrate the validity of scientific processes. Involve parents in a question and answer period. /11 Seek their involvement in science fairs, etc.. Community Relate to mutual needs using all available media. Speaking to Community groups.
	Arrange student tours to businesses that utilize the recent findings of research and/or engage in scientific research. (One or more similar answers in each group acceptable)

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

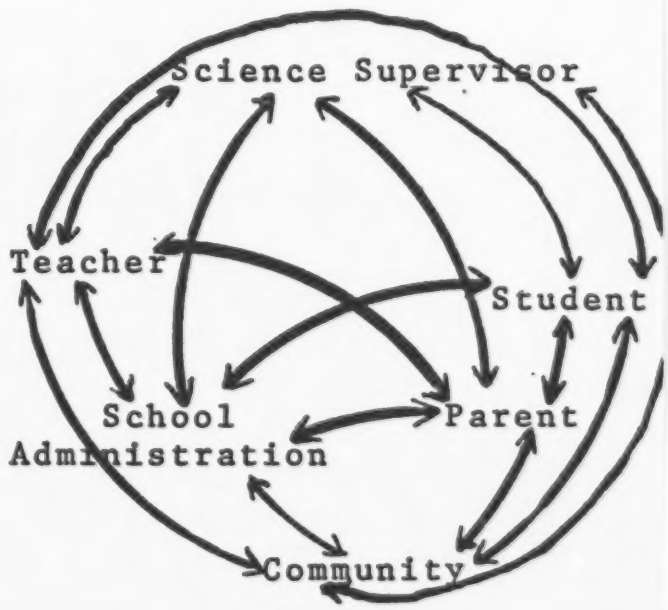
DATE _____ NAME _____

STIMULUS	RESPONSE
1. Continued. (c) What will be the specific result from each group's non-support of the program?	<u>Teachers</u> Successful changes <u>within</u> the school impossible without teacher support. /11 Necessary insight into student capabilities will be unavailable. <u>Students</u> Changes more difficult without student support. It would be more difficult to get parent support. <u>Parents</u> Program could be scuttled if parents use mininformation when talking to community. May prevent community financial and moral support.

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

DATE _____ NAME _____

STIMULUS	RESPONSE
1. (c) Continued.	Community Financial and moral support may be missing. Interaction with the community (jobs etc.) may be retarded or stopped. (One or more of the ideas listed above for each category acceptable) /117
2. Demonstrate by chart or diagram the concept of communication as a circular activity. Be sure to include interrelationships between the Supervisor and School Administration, Parents, Teachers, Students, and Community.	 Example of Interrelationship (Must show a two-way process)

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

DATE _____ NAME _____

STIMULUS	RESPONSE
3. Contrast the type of support educators received in the past with support of present time.	Past - Automatic, passive acceptance. /118 Present - Must be earned a) "Show-me"attitude of students, parents, society, community, teachers. b) Questioning - content, methodology, relevance etc. (Minimally, include two or more of the above or similar ideas.)
4. Name two reactions which teachers generally have to change.	a) Fear. b) Welcome change, but don't understand what is expected of them.

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

DATE _____ NAME _____

STIMULUS	RESPONSE
5. What is the direction of flow of communication? Support your choice.	Communication is a <u>two-way flow</u>. The science supervisor <u>must initiate</u> this /11 communication, if he desires support, but he must also <u>listen and seek</u> and utilize the input. (Minimally include the underlined ideas)
6. In what way is communication similar, regardless of the group to whom one is communicating?	a) Describing, explaining, justifying. b) Informing WHY the changes are necessary: - What changes are needed - Where these will lead. - How it will be done.

CRITERION ASSESSMENT

SET I PACKAGE PUBLIC RELATIONS

DATE _____ NAME _____

STIMULUS	RESPONSE
7. What is the goal of the science supervisor's involvement in the community?	Interaction of the school and community. Growth and understanding through the interaction. /120 Support of the science program. (One or more of the ideas similarily stated)
8. What are the rewards of a good Public Relations program?	a) Support for your work. b) Successful changes in the schools. c) Innovative programs. d) Higher quality learning system. e) Public support. (Two or more of the above or similar answers)

PROTOTYPE

APPLICATION HANDBOOK

for

RESEARCH

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Nat'l Science Teachers Asso.
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

SET I

This material is for validation purposes only.
DO NOT DISTRIBUTE OR DUPLICATE.

The following package on Research
was prepared by

Writer: Camille Marker

Art Preparation: Jack Martinelli /122

Photography: Mary McGovern

Audio: Douglas Boyd

Editing & Revision: Clarice Leslie

Mary McGovern

George H. Ziener

Criterion Assessments: Virginia Trowbridge

Manuscript Coordinator: Dorothy B. Lutz

TABLE OF CONTENTS

MEDIA SHEET

INTRODUCTION

SCRIPT

BIBLIOGRAPHY OF SUPPORT MATERIAL

CRITERION ASSESSMENTS - PRE/POST

MEDIA SHEET

The following media are necessary for the presentation of this package:

/124

1 set of SLIDES on RESEARCH.

1 audio cassette TAPE on RESEARCH.

1 carousel SLIDE PROJECTOR.

1 audio CASSETTE TAPE RECORDER.

(Optional)

1 CASSETTE SLIDE SYNCRONIZER by Norelco or its equivalent.

my

INTRODUCTION

Purpose:

1) To expose the science supervisor to the need for research in new developments both in science and in education. /125

2) To present a number of available sources for this information and suggestions for utilizing these sources.

Objectives:

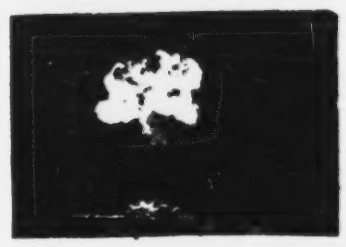
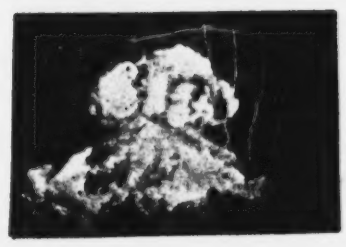
The science supervisor will be able to

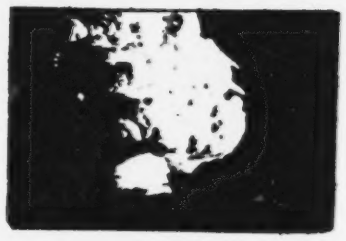
1) identify at least eight major professional journals he should be aware of,

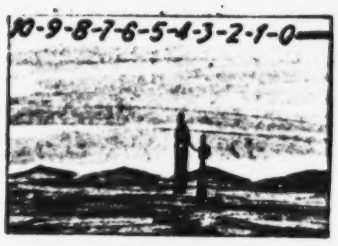
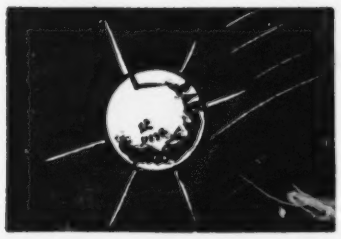
2) specify the importance of ERIC in meeting his research needs and identify the specific ERIC center for science education,

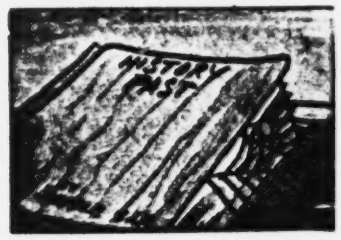
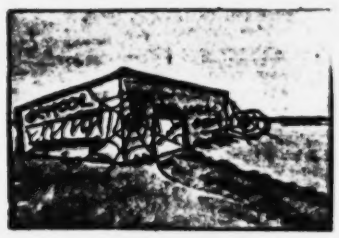
3) give at least three specific reasons for the importance of educational research in his professional activity,

4) outline a means by which he can make this research available to teachers in science.

SOUND	VISUALS
1. No sound.	
	/126
2. No sound.	
3. In the desert sands of Alamagordo, New Mexico, July 16, 1945, the world of science and scientists was pushed into an awesome, new perspective, a new responsibility, and into the public limelight.	
4. Sound of explosions.	

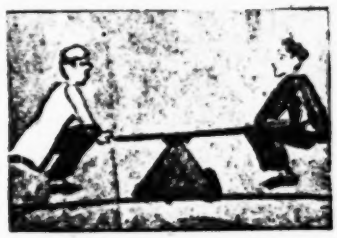
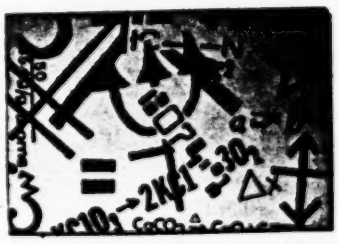
SOUND	VISUALS
5. Sounds of explosions.	
6. Sounds of explosions.	 /127
7. It became imperative for the U.S. to raise its general level of scientific literacy....	
8. Not only to train more young scientists to meet the demands of this new, exploding technology, but also to develop literate citizens in the new age of technology.	

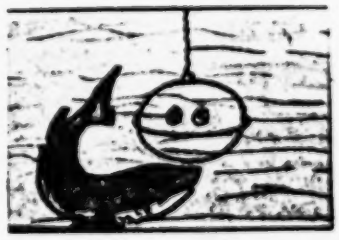
SOUND	VISUALS
9. Then.... in 1957....	
10. (Countdown in Russian) Sound of lift-off.	 /128
11. ....the U.S.S.R. sent the first artificial Earth satelite into orbit.	
12. The reverberations initiated then, still echo in our time.	
13. The post mortems.... the devastating critiques of our educational system.... prescriptions for all our educational problems.	

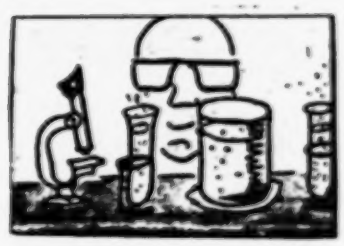
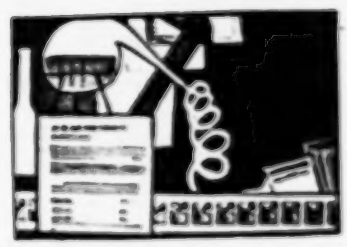
SOUND	VISUALS
14. All this is past history, but the emphasis and need for improving the science curriculum continues.	
15. The already vast body of scientific knowledge continues to grow with increasing momentum.	
16. Educational institutions are notoriously slow to change. The lag between the movement of ideas from formulation in theory and research to implementation in the science curriculum is a continual problem for curriculum people.	

/129

SOUND	VISUALS
17. One of your most important jobs is to act as an agent of change.... to facilitate growth and development of the science curriculum,	
18. of the science teaching staff,	/130
19. and as an end product, the growth and development of a high level of scientific literacy in the students themselves.	
20. To be such an agent of change, you must be knowledgeable of the major developments in science teaching as well as in the scientific community.	

SOUND	VISUALS
21. Most supervisors share with many college professors a critical deficiency....Few are actively involved in research which will improve science education.	
22. There is a need to develop a climate in which the science supervisor turns to educational research for guidance or answers to the many unresolved and critical questions in science education. Just as he would turn to science research for answers in science.	
23. At the same time, it is necessary to maintain a critical attitude toward the results and validity of that research.	

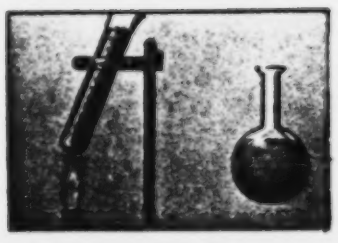
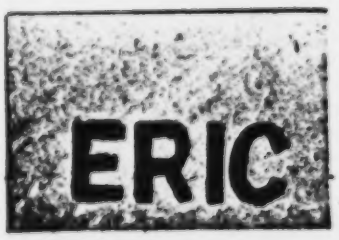
	SOUND	VISUALS
24	But what kind of research???? Research for what????	
25.	Basic, pure research....of the great....scientific thinkers.... of the past and present????	/132
26.	Or, the applied research of the technologists who are seeking practical solutions for the myriad of problems of society. For example....	
27.	....the disposal of junk, much of it unreusable in any form....	
28.	Food supplies from the ocean floor....	

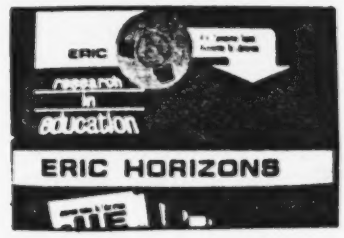
SOUND	VISUALS
29. The release of man from crippling diseases of mind and body....	
30.	/133
31.	
32. Or research in curriculum revision and innovation. Research in the applications of individualized learning procedures, student oriented learning, and a myriad of new ways to improve student learning.	

SOUND	VISUALS
33. The relationship of the Supervisor to both science and educational research is, indeed, important. But it is necessary for you to determine what research has applicability to your own school system's needs.	

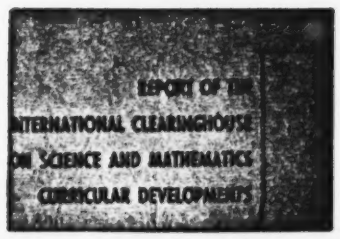
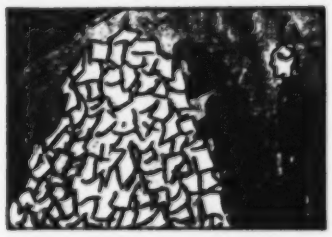
/134

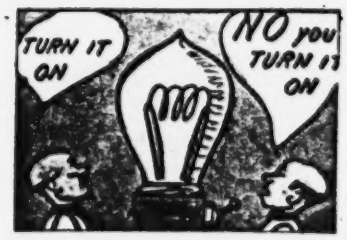
34. Not all the packaged material of the major educational research projects may be appropriate for use in your school.	
35. The philosophy and emphasis of many of those projects in curriculum innovation may meet the needs of only a small segment of your school population....the academic elite.	

SOUND	VISUALS
36. As a supervisor, you must work toward an integrated and balanced science curriculum which will raise the general level of scientific literacy and serve the needs of the entire, broad spectrum of your student body. Both future scientists and nonscientists.	/135
37. To be a facilitator of change, you must know what research has been completed, as well as ongoing activities. This is no mean task, but there are ample resources at your disposal,	
38. such as ERIC, Educational Research Information Clearinghouse, a division of the Bureau of Research in the U.S. Office of Education.	

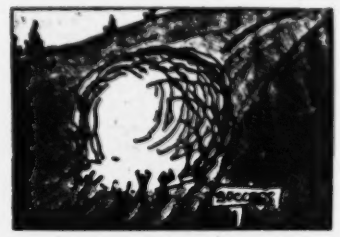
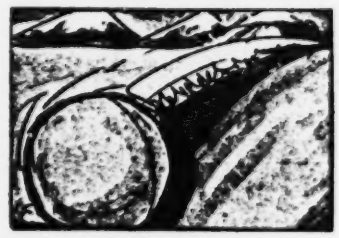
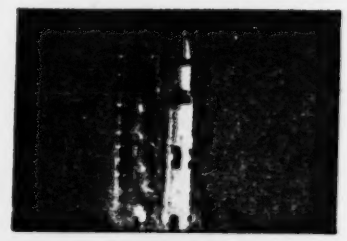
SOUND	VISUALS
39. ERIC, with its 19 clearinghouses scattered throughout the country, offers a variety of materials which will enable you to keep informed of many of the current research projects in the country.	
40. For the science supervisor, the ERIC Center at Ohio State University, SEIAC (Science Education Information Analysis Center) is the most important.	
41. In your handbook, there is a list of ERIC Centers and information on how to obtain material from the ERIC Document Reproduction Service.	

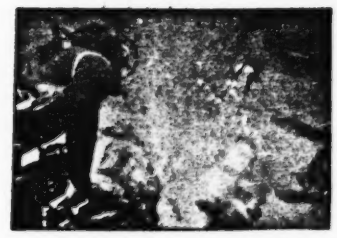
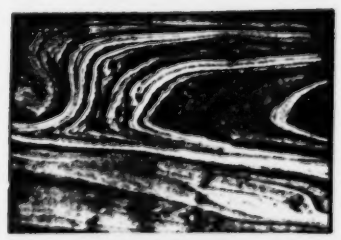
/136

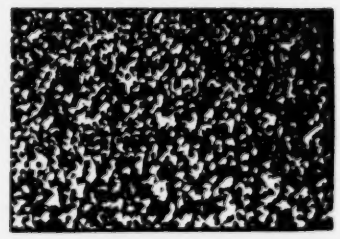
SOUND	VISUALS
42. Another valuable source of research information on science education is the International Clearinghouse on Science and Math Curricular Developments....a joint project of the Commission on Science Education of AAAS and the Science Teaching Center at the University of Maryland.	 /137
43. In addition, there are numerous professional journals which provide reports and information of value to science educators.	
44. As a science supervisor you must evaluate this plethora of material available from the various sources already discussed, in terms of meeting student needs, through curriculum change and through new learning approaches.	

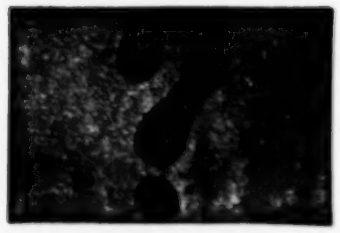
SOUND	VISUALS
45. You should initiate research projects of a less ambitious nature within local schools, and involve the entire teaching staff,	
46. and encourage teachers to initiate projects of their own.	
47. Participation in small scale research efforts of a cooperative nature, with other school systems, or with a local university, will create a spirit of involvement in research on the part of students and teachers, rather than remaining as passive consumers of the research results of others.	
48. Engaging in research requires development of an adequate research	

/138

SOUND	VISUALS
48. Continued. design to meet the requirements, and then the exercise of considerable leadership to see the project through to completion.	/139
49. Full participation and cooperation of the teaching staff are necessary for the success of any project.	
50. As the proliferation of scientific knowledge continues with increasing momentum, so too have the challenges to science education.	
51. While there are the moon,	
52. the far reaches of outer space,	

SOUND	VISUALS
53. and the depths of the sea to conquer....	
54. there are many less glamorous challenges to science and education....including the collection and disposal of countless tons of garbage each day....	/140
55. ....the coming breakdown of transportation....	
56. ....the increasing deterioration of the earth's water supply....	

SOUND	VISUALS
57. ....the pollution of the air we breathe....	
58. ....and the increasing level of nerve destroying noise.	/141
59. These are but a sampling of the problems which make the challenge to science education loud and clear.	
60. Your role and responsibilities as a science supervisor are, to a great degree, what you choose them to be. The direction of any science program is significantly determined by how you utilize research as a means for improving local programs.	

SOUND	VISUALS
61. The challenge is there, but the decision is yours.	

/142

RESEARCH PACKAGE

B I B L I O G R A P H Y

Norman J. Boyan, "The Political Realities of Educational R & D," Journal of Research Development in Education, 2:4 (Summer 1969), pages 3-18.

William L. Cox and Daniel Van Gorp, "Teachers' Research Participation: An Adventure in Science," Science Teacher, 34:6 (September 1967), pages 34-7.

Robert M. Morgan, "The Science of Education: Research Ideas and Needs," Science Teacher, 34:8 (November 1967), pages 32-3.

/143

Educational Resources Information Center.

The Educational Resources Information Center (ERIC) is a national information network designed to facilitate dissemination of educational research findings and other research related documents. Four major components constitute ERIC:

(1) Central ERIC is the headquarters staff office located in the U.S. Office of Education, Washington, D.C. Overall management and coordination of the other three components is carried out from Central ERIC.

(2) Nineteen ERIC Clearinghouses analyze, abstract, and index documents for dissemination through components 3 and 4 of ERIC. Each ERIC Clearinghouse staff has competence in a specialized area of educational research, the scope of which is described in the Directory beginning on the next page.

(3) Research in Education is a monthly abstract journal which lists research reports currently abstracted by the nineteen ERIC Clearinghouses and also contains resumes of recently funded projects of the Bureau of Research, U.S. Office of Education. The annual subscription price to Research in Education is $11.00 domestic, $13.25 foreign. Orders should be addressed to

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

(4) The ERIC Document Reproduction Service (EDRS) makes it possible to obtain microfiche hardcopy of all documents listed in Research in Education. Special rates are available for microfiche standing order subscribers (about $60 per month). The price per individual fiche is 8.4 cents for standing orders; 25 cents per fiche for individual titles. Facsimile hardcopy reproduction is available at 4 cents per page. The ERIC Document Reproduction Service is operated by the National Cash Register Company and all correspondence should be addressed to

EDRS
The National Cash Register Company
4936 Fairmont Avenue
Bethesda, Maryland 20014

/144

DIRECTORY: ERIC Clearinghouses

The scope of each clearinghouse is described in the annotation following the center name. Those who wish to submit documents for possible inclusion in the ERIC system should direct them to the most appropriate clearinghouse. Should a document seem applicable to more than one clearinghouse, two copies should be sent to the clearinghouse that has responsibility for the major subject emphasis of the document.

ADMINISTRATION, Educational

DIRECTOR: Dr. Philip K. Piele

ADDRESS: ERIC Clearinghouse on Educational Administration
320 Hendricks Hall
University of Oregon
Eugene, Oregon 97403

TELEPHONE: (503) 342-1411 Ext. 1336

The educational administration clearinghouse is responsible for research reports and other documents relating to the organization, leadership and administration of educational programs and organizations, and to the preparation of educational administrators. These reports cover the traditional and the economic and behavioral science factors of administration at all levels of education, except those limited specifically to facilities and to the junior college.

ADULT EDUCATION

DIRECTOR: Mr. Roger DeCrow

ADDRESS: ERIC Clearinghouse on Adult Education
Syracuse University
107 Roney Lane
Syracuse, New York 13210

TELEPHONE: (315) 476-5571 Ext. 3493

The clearinghouse on adult education is responsible for acquiring and disseminating research information in the following areas: informal adult education carried on by national or community voluntary and service agencies; adult education in the formal educational system, such as public schools, junior and community colleges and universities; inservice training in business, industry, unions, and the armed forces; church-sponsored adult education; educational aspects of community development, and rural and urban extensions; fundamental and literacy education for adults; educational media programs involving adults; correspondence study; and continuing education in the professions. Adulthood is defined not only by chronological age, but also by the assumption of mature responsibilities such as marriage or full-time employment.

/145

COUNSELING AND PERSONNEL SERVICES

DIRECTOR: Dr. Garry R. Walz

ADDRESS: ERIC Clearinghouse on Counseling and Personnel Services
University of Michigan
611 Church Street, 3rd Floor
Ann Arbor, Michigan 48104

TELEPHONE: (313) 764-9492

The clearinghouse on counseling and personnel services is responsible for materials and research reports relating to the preparation, practice and supervision of counselors and other personnel workers at all educational levels and in all settings. Included are materials describing theoretical developments; the use and results of personnel procedures such as testing, interviewing, disseminating, and analyzing environmental information; group work and casework; and reports on program development and evaluation. Included also are materials which deal with the nature of pupil, student, and adult characteristics; descriptions of educational, occupational, and community settings; and discussions of the types of assistance provided by personnel workers in such areas as career planning, family consultations, and student orientation and activities.

DISADVANTAGED

DIRECTOR: Dr. Edmund W. Gordon

ADDRESS: ERIC Clearinghouse on the Urban Disadvantaged
Teachers College, Columbia University
1258 Amsterdam Avenue
New York, New York 10027

TELEPHONE: (212) 870-4804

The clearinghouse on the disadvantaged is responsible for research reports and other documents related to the educational, psychological, social, and general development of urban children and youth who are socially, economically, or culturally disadvantaged. Included are documents relevant to the effects of disadvantaged environments and status on cognitive and affective development; the academic, intellectual, and social performance of the disadvantaged young person; programs and practices which provide directed learning experiences designed to help compensate for the special problems and build upon the characteristics of the disadvantaged; and documents related to economic and ethnic discrimination, segregation, desegregation, and integration in education.

/14

EARLY CHILDHOOD EDUCATION

DIRECTOR: Dr. Lilian G. Katz

ADDRESS: ERIC Clearinghouse on Early Childhood Education
University of Illinois
805 West Pennsylvania
Urbana, Illinois 61801

TELEPHONE: (217) 333-1386

The clearinghouse is responsible for research documents on the physiological, psychological, social, and cultural development of children from birth through primary grades.

ENGLISH, Teaching of

DIRECTOR: Dr. Bernard O'Donnell

ADDRESS: ERIC Clearinghouse on the Teaching of English
National Council of Teachers of English
508 South Sixth Street
Champaign, Illinois 61820

TELEPHONE: (217) 359-4751

The clearinghouse on the teaching of English is responsible for research documents on teaching the skills and content of English and on the methodology of teaching English through the secondary level.

EXCEPTIONAL CHILDREN

DIRECTOR: Dr. Donald Erickson

ADDRESS: ERIC Clearinghouse on Exceptional Children
Council for Exceptional Children
Jefferson Plaza, Suite 900
1499 Jefferson Davis Highway
Arlington, Virginia 22202

TELEPHONE: (703) 521-8820

The clearinghouse on exceptional children is responsible for documents related to the education of children and youths who require special services, including the gifted, mentally retarded, visually impaired, deaf, hard of hearing, physically handicapped, emotionally disturbed, and speech and language impaired. Included are reports concerned with the cognitive functioning of such children, their behavioral, psychomotor, and communication disorders, visual impairments, and severe academic learning problems; and reports on the administration of special education services and the preparation and continuing education of professional personnel working in this area.

FACILITIES, Educational

DIRECTOR: Dr. Howard Wakefield

ADDRESS: ERIC Clearinghouse on Educational Facilities
University of Wisconsin
606 State Street, Room 314
Madison, Wisconsin 53706

TELEPHONE: (608) 262-0197

The clearinghouse on educational facilities is responsible for research documents on sites, buildings, and equipment used in an educational operation and on the environmental aspects of educational facilities.

FOREIGN LANGUAGE, Teaching of

DIRECTOR: Dr. Kenneth Mildenberger

ADDRESS: ERIC Clearinghouse on the Teaching of
Foreign Languages
Modern Language Association of America
62 Fifth Avenue
New York, New York 10011

TELEPHONE: (212) 691-3200

The clearinghouse on the teaching of foreign languages is responsible for research reports and other documents related to the teaching of French, German, Italian, Russian, Latin, and Classical Greek. It is responsible for collecting information on instructional methodology, psychology of language and language learning, presentation of the cultural and intercultural context, application of linguistics, curricular problems and developments, and teacher training and qualifications specific to the teaching of these languages. Also included in the scope of this clearinghouse is the teaching and the preparation of college teachers of English at the undergraduate and graduate level.

/148

HIGHER EDUCATION

ACTING DIRECTOR: Dr. Carl J. Lange

ADDRESS: ERIC Clearinghouse on Higher Education
George Washington University
One Dupont Circle Building, Suite 630
Washington, D.C. 20036

TELEPHONE: (202) 296-2597

The clearinghouse on higher education is responsible for research reports and other documents dealing with higher education, including graduate and professional education. Documents dealing specifically with certain aspects of higher education (e.g., teacher education, junior colleges, science education, teaching of foreign languages, etc.) are within the scope of other clearinghouses. However, when a document deals with one of these subjects as a component of an overall program for higher education, or when a subject is mentioned in a document concerned more with the general area of higher education than the specific subject itself, it is within the scope of the clearinghouse on higher education (tentative description of scope).

JUNIOR COLLEGES

DIRECTOR: Dr. Arthur M. Cohen

ADDRESS: ERIC Clearinghouse on Junior Colleges
Powell Library, Room 96
University of California at Los Angeles
405 Hilgard Avenue
Los Angeles, California 90024

TELEPHONE: (213) 825-3931

The clearinghouse on junior colleges is responsible for research reports and research-related documents relevant to public and private community and junior colleges, including studies concerned with junior college students, staff, curriculums, programs, libraries, community services, and any other subject specifically related to the development, administration, and evaluation of junior college operations.

LIBRARY AND INFORMATION SCIENCE

DIRECTOR: Dr. Wesley Simonton

ADDRESS: ERIC Clearinghouse on Library and Information Sciences
University of Minnesota
2122 Riverside Avenue
Minneapolis, Minnesota 55404

TELEPHONE: (612) 373-7720

The clearinghouse on library and information science is responsible for research documents on the operation of libraries and information centers, the technology used to improve their operations, and the education and training of librarians and information specialists.

LINGUISTICS AND THE UNCOMMONLY TAUGHT LANGUAGES

DIRECTOR: Dr. A. Hood Roberts

ADDRESS: ERIC Clearinghouse on Linguistics and the Uncommonly Taught Languages
Center for Applied Linguistics
1717 Massachusetts Avenue, N.W.
Washington, D.C. 20036

TELEPHONE: (202) 265-3100 X 279

The clearinghouse on linguistics and the uncommonly taught languages is responsible for research reports and other documents dealing with linguistics and related language sciences and languages not commonly taught in the United States; that is, all except French, German, Italian, Spanish, Russian, Latin, Classical Greek, and English as a second language. Included are those reports concerned with the language teacher or researcher in the language sciences and those dealing with phonetics, psycho-linguistics, programmed instruction of languages, socio-linguistics, structural and descriptive linguistics, applied linguistics, language pedagogy, bilingualism, and those instructional materials restricted to the uncommonly taught languages. /150

MEDIA AND TECHNOLOGY, Educational

DIRECTOR: Dr. William J. Paisley

ADDRESS: ERIC Clearinghouse on Educational Media and Technology
Institute for Communication Research
Cypress Hall
Stanford University
Palo Alto, California 94305

TELEPHONE: (415) 321-2300 Ext. 3345

The clearinghouse on educational media and technology is responsible for research documents on instruction through programmed instruction and through audiovisual and broadcast media.

READING

DIRECTOR: Dr. James L. Laffey

ADDRESS: ERIC Clearinghouse on Reading
School of Education
Indiana University
200 Pine Hall
Bloomington, Indiana 47401

TELEPHONE: (812) 337-9101

The clearinghouse on reading is responsible for research reports and other materials on all aspects of reading

behavior, with emphasis on physiology, psychology, sociology, and the teaching of reading. Included are reports on the development and evaluation of instructional materials, curricula, tests, and measurements; the preparation of reading teachers and specialists; methodology at all levels; the role of libraries and other agencies in fostering and guiding reading; and diagnostic and remedial services in school and clinic settings.

RURAL EDUCATION AND SMALL SCHOOLS /151

DIRECTOR: Dr. Everett Edington

ADDRESS: ERIC Clearinghouse on Rural Education and Small Schools
Box 3-AP
University Park Branch
New Mexico State University
Las Cruces, New Mexico 88001

TELEPHONE: (505) 646-2623

The clearinghouse on rural education and small schools is responsible for research reports and other documents related to the particular aspects of the educative process which include organization, administration, curricula, instruction, innovative programs, and the economic, cultural, social, or other factors related to educational programs of small schools or rural education in general.

SCIENCE EDUCATION

DIRECTOR: Dr. Robert W. Howe

ADDRESS: ERIC Information Analysis Center on Science Education
Ohio State University
1460 West Lane Avenue
Columbus, Ohio 43221

TELEPHONE: (614) 293-6717

The clearinghouse on science education is responsible for research reports and other documents related to all levels of science education--elementary, secondary, higher and adult and continuing education. Included are those reports

concerned with the clarification of science objectives; development of curricula and teaching materials; applications of media to science education, with related methodological or evaluation studies; reports on the impact of such factors as interest, intelligence, values, and concept development upon learning of scientific material; and any reports bearing on related preservice and inservice teacher education and supervision in science programs.

TEACHER EDUCATION

/152

DIRECTOR: Dr. Joel L. Burdin

ADDRESS ERIC Clearinghouse on Teacher Education
One Dupont Circle Building
Suite 616
Washington, D.C. 20036

TELEPHONE: (202) 293-7280

The clearinghouse on teacher education is responsible for research reports, curriculum descriptions, theoretical papers, addresses, and other documents relevant to the preservice and inservice preparation of preschool and elementary-secondary school personnel as well as the preparation of "teachers of teachers."

VOCATIONAL AND TECHNICAL EDUCATION

DIRECTOR: Dr. Robert E. Taylor

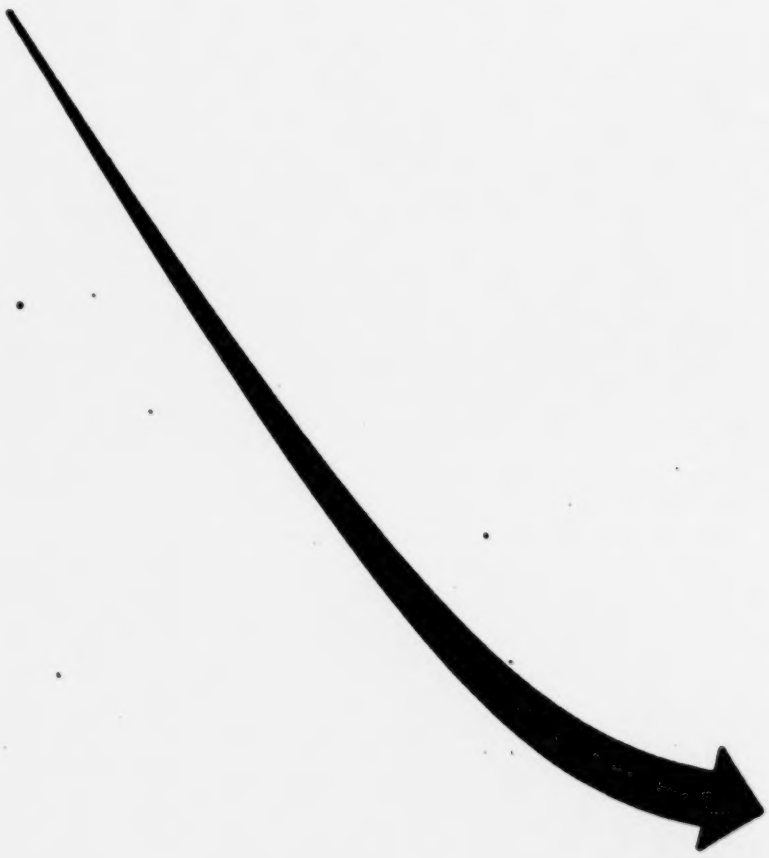
ADDRESS: ERIC Clearinghouse on Vocational and Technical Education
Ohio State University
1900 Kenny Road
Columbus, Ohio 43210

TELEPHONE: (614) 486-3655

The clearinghouse on vocational and technical education is responsible for research reports and other documents related to the general field of vocational and technical education. Included are reports on the specific fields of agricultural education, business and office occupations education, distributive education, health occupations education, home economics education, technical education,

trade and industrial education, training in new sub-professional fields, and the related fields of industrial arts education, labor economics, occupational psychology, and occupational sociology. Specifically included are subject categories such as administration, curriculum development, employment opportunities, evaluation, facilities and equipment, historical studies, individuals with special needs, innovative and experimental programs, instructional materials and devices, learning processes, manpower economics, occupations (jobs), philosophy and objectives, research methods, student personnel services, students (characteristics), teachers, and teacher education and teaching methods when related specifically to vocational and technical education.

EDUCATIONAL TECHNOLOGY PROJECT



PRE-POST

criterion assessments

SET I RESEARCH

For this report the desired responses have been included on the sheet opposite each question.

NATIONAL SCIENCE TEACHERS ASSOCIATION
1201 Sixteenth St., N.W., Washington, D.C. 20036

CRITERION ASSESSMENT

SET I PACKAGE RESEARCH

DATE _____ NAME _____

STIMULUS	RESPONSE
1. What is the role of the Science Supervisor in relation to teachers, students, and administration because of the knowledge explosion and the status-quo characteristics of institutions?	a) Agent of change toward teacher. b) Provide curriculum that provides <u>scientific literacy for students</u>. /15 c) Educate upward (to administration) in order to secure money; permission for innovation. (Any two acceptable. May be similarily stated.)
2. Science Supervisors should be involved in applied research, pure research, or NO research? Choose one or more and give rational for choice(s).	Any answer acceptable. Rationale must include the idea of consideration of all factors of the system in making the decision. (Must fit into total philosophy of science program)

CRITERION ASSESSMENT

SET 1 PACKAGE RESEARCH

DATE _____ NAME _____

STIMULUS	RESPONSE
3. Upon what basis should packaged science material be chosen for use in your school?	Choice made on basis of how it will fit in with the integrated science program that will produce scientific literacy and meet the needs of the student population. /15
4. Name at least four information sources of science education research.	a) ERIC 1) Research in Education 2) Research (monthly report) b) International Clearinghouse on Science & Math Curricular Developments. c) Journal of Research in Science & Math d) Nature and Science e) School Science & Math f) Science g) Science & Children h) The Science Teacher

CRITERION ASSESSMENT

SET I PACKAGE RESEARCH

DATE _____ NAME _____

STIMULUS	RESPONSE
5. How would you as a Science Supervisor utilize in the most effective way, the plethora of research material available?	a) Evaluate b) Modify c) Interpret d) Implement /15 e) Initiate research based on reading in the research field. f) Encourage teachers to undertake a science research project. (Any 4 of the above)
6. After reading and evaluating the most recent research on hematology and hemophilia, you have decided to cooperate with Walter Reed Hospital in a small research project. In order to participate in this project what roles will you have to play in terms of your school system?	a) Develop an adequate research <u>design</u> to meet the requirements. b) <u>Exercise</u> considerable <u>leadership</u> to see that the teaching staff carries out the project. (Must incorporate both of the underlined ideas)

CRITERION ASSESSMENT

SET I PACKAGE RESEARCH

DATE _____ NAME _____

STIMULUS	RESPONSE
7. What is your function as a Science Supervisor in relation to the continuing challenge to science education?	a) Research awareness and utilization. b) Catalyst /158 c) Leader d) Determine direction science education should take.
8. Are there differences between Science Research and Science Education Research? What are they? What are the similarities?	Yes. Science Education Research specifically oriented toward content and approaches to the learning of science. Science Research is a far more general area not limited to education activity. <u>Alike</u> - Both employ Scientific Research Processes. <u>Different</u> - Area covered (content) differs.